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# CITY GOVERNMENT

APRIL, 1897.

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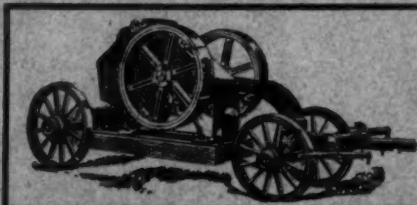
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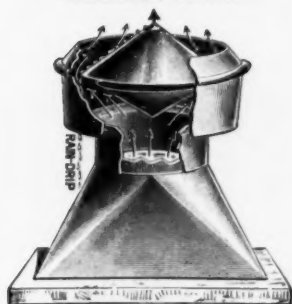
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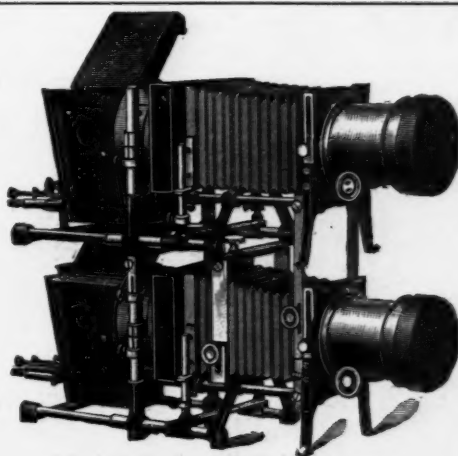
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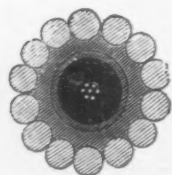
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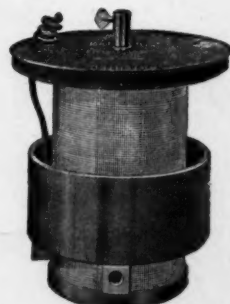
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# CITY GOVERNMENT.

[Entered as Second-Class Matter at the New York, N. Y., Post Office, August 12, 1896.]

VOL. 2. No. 4.

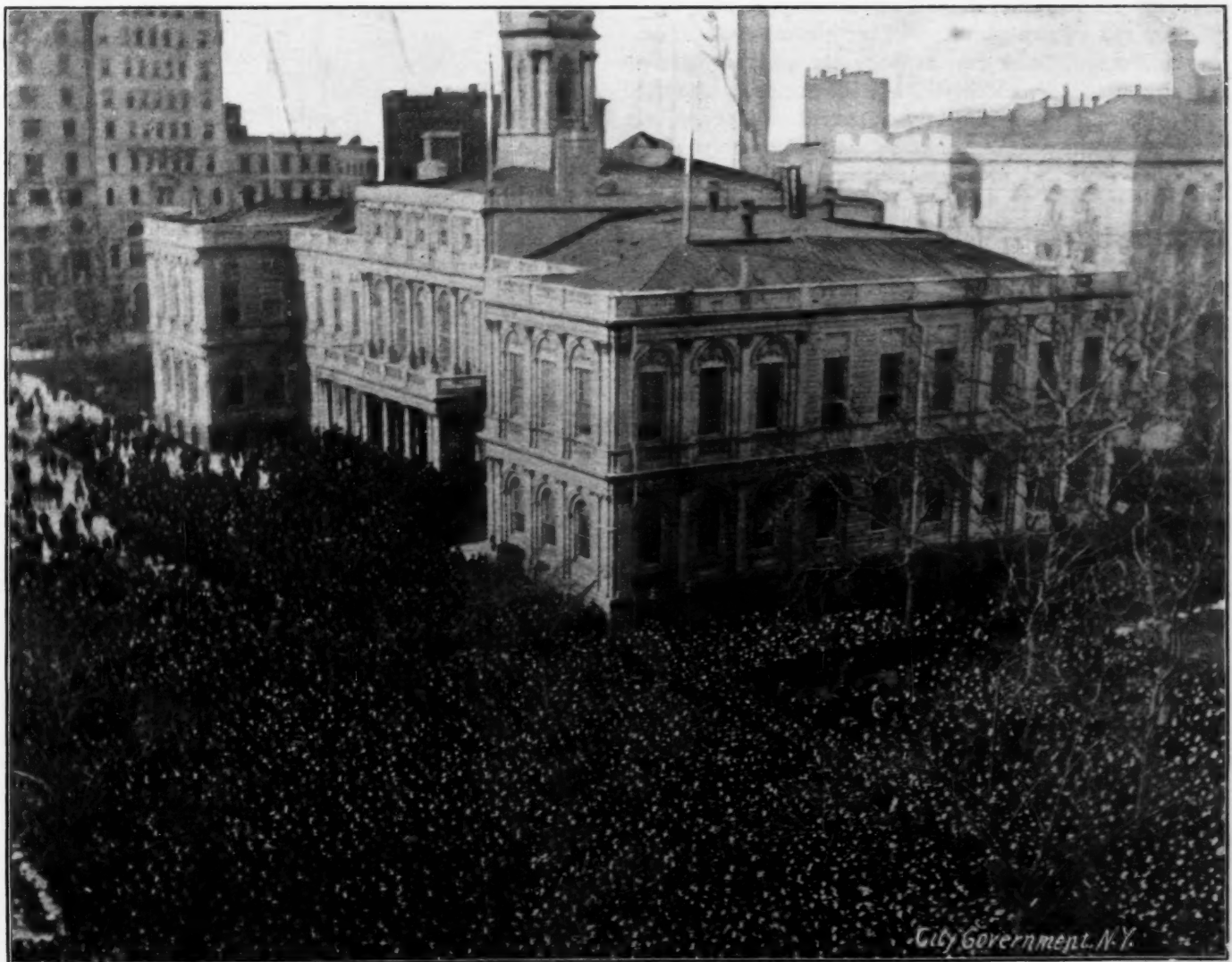
NEW YORK, APRIL, 1897.

\$3 A YEAR.

## A SCENE IN GREATER NEW YORK.

The city hall of New York, shown in the illustration on this page, is not a new structure, and, consequently, there is no call at this time for a description of its architectural beauties, nor is there any particular demand for a rehearsal of the many historic incidents connected with the famous old building. Looking out into the City Hall Park from the windows of the CITY GOVERNMENT office,

fact, these people are crushing the bones of each other in a laudable effort to get nearer to the bulletin boards of the newspaper offices across the way, where the details of the scientific encounter between Mr. Robert Fitzsimmons and Mr. James J. Corbett are being displayed, after being wired across the continent from Carson, Nevada. If any of our readers care to count the heads shown in this picture, and then add to the number about



CITY HALL PARK, NEW YORK, AS SEEN FROM CITY GOVERNMENT OFFICE, MARCH 17, 1897. 91

on the afternoon of March 17, the scene was sufficiently interesting to induce our artist to bring his camera into play, and we present the result for the contemplation of those of our readers who have not the privilege of viewing scenes in Greater New York every day. The great concourse of people shown in our picture are not office seekers awaiting an audience with the mayor, nor are they assembled together for the purpose of hearing the returns from some important election. As a matter of

8,000 or 10,000 people who were in the street below our windows and whose portraits our artist's camera could not catch, they will have a fair idea of the amount of interest the people of this section of Greater New York take in a prize fight. The crowd that gathered in front of the newspaper offices and overflowed into City Hall Park on the night of the last presidential election day was scarcely larger than the concourse seen there on the afternoon of March 17.

## PAVING IN PEORIA.

In the matter of street paving no city in the United States furnishes a better model than Peoria, Ill. Over one-quarter of the total mileage of streets within the city limits is paved, and, speaking generally, the pavements are of superior quality because the utmost care has been exercised in the selection of materials and the construction. The brick and asphalt streets which have been laid in Peoria during recent years have attracted much attention on account of their general good qualities, and, consequently, Almon D. Thompson, the city engineer, under whose supervision they were constructed, has gained something of a reputation as an expert on paving.

There are 28.88 miles of paved streets in Peoria, made of the following materials: Brick, 473,194 square yards; asphalt, 146,470 square yards; stone block, 29,622 square yards; cobble stone, 17,506 square yards, and cedar block, 9,176 square yards. All the pavements laid last season were of brick and asphalt, the property owners having concluded that these materials are the best suited to local conditions. The cost of pavements per square yard during the past season is shown in this table:

Kind of Pavement.	On	Foundation.	Prices.	Average Price.
Brick.....	Streets	6 inch concrete	\$1.32 to \$1.48½	\$1.350
Brick.....	Streets	8 inch concrete	1.51 to 1.52	1.518
Brick.....	Alleys	6 inch concrete	1.43 to 1.45	1.443
Asphalt....	Streets	6 inch concrete	1.84 to 1.90	1.870

The cost of brick pavements given above includes only the foundation, sand cushion and wearing surface, while the cost of asphalt includes foundation, wearing surface and excavation.

Early in 1896, upon the recommendation of City Engineer Thompson, the following alterations in the paving specifications were made:

- (1) Increase of alley foundations from 4 to 6 inches in thickness.
- (2) The use of four parts of broken stone in the concrete, instead of five parts.
- (3) Brooming surface of concrete to a smooth surface.
- (4) Requiring a sand cushion on brick pavements 2 inches instead of 1 inch in thickness.

Mr. Thompson in his annual report, issued recently, comments upon the result of these changes as follows:

Six inches of concrete has been the minimum thickness used in both street and alley paving. This is an increase of 2 inches in thickness in alleys over that used during the two previous seasons, and the results obtained have been much more satisfactory.

The use of four parts instead of five parts of broken stone, ranging uniformly in size from one-fourth inch to 2½ inches, has given a more solid and permanent concrete. There has been no difficulty in bringing mortar to the surface by proper tamping, which has materially decreased the amount of grouting formerly found necessary and has produced a stronger concrete. The proportion of one part cement, one and one-half to two parts sand and four parts broken stone, of the above size, appears to give the best results in street concrete work with a natural cement.

Brooming the top of the concrete to a smooth surface and using a 2-inch sand cushion have been of material assistance in procuring smoother brick pavements.

As to ridges in brick pavements, Mr. Thompson says:

The concrete laid in continuous sheets has shown a tendency on several streets to buckle and form ridges in the pavements, caused by the expansion of the concrete. The specifications for the coming season provide for the concrete to be separated at each 300 feet of length by a space 1 inch wide, to allow for this expansion and prevent the formation of such ridges. This is the only change considered desirable in the brick paving specifications.

In regard to asphalt paving, Mr. Thompson's report says:

Under the present method of laying asphalt pavements in this city, a coat of asphalt one-half inch in thickness, known as a cushion coat, is first laid on the concrete foundation and rolled, upon which a wearing surface 2 inches in thickness is laid and thoroughly compacted. The cushion coat is placed to protect the concrete and is composed of the same ingredients as the wearing surface, but contains from 2 to 4 per cent. more of asphaltic cement. The wearing surface is laid hot and compacted by a heavy roller, so that the two coats are bonded together and compose the pavement 2½ inches thick.

The coefficient of expansion of an asphalt pavement has not been definitely determined, but the investigations indicate that it is somewhat greater than that of wrought iron. The sudden and extreme differences in temperature to which the pavement is subjected in this climate cause enormous expansive and contractive forces to be exerted in an asphalt sheet a mile or so in length. The cohesive strength of the mixture is not sufficient to resist the tension caused by low temperatures and the pavement must necessarily crack. Again, in high temperatures the asphalt expands and increases in length, forming ridges and rolls. These faults create dissatisfaction among the citizens paying for the improvements, are annoying to the public using the streets, and detrimental to the pavement.

I believe the method of laying the pavement as above described is mainly responsible for these faults—the smooth surface of the concrete foundation offers no resistance to the movement of the equally smooth wearing surface resting upon it. To overcome the difficulty, I would recommend that the specifications be altered, so that the pavement shall consist of a binder coat 1 inch in thickness and a wearing surface 2 inches in thickness. This binder coat is an asphaltic concrete composed of crushed stone or gravel cemented together with asphaltic cement. Containing a large amount of cementitious material, it adheres strongly to the concrete foundation and asphalt wearing surface between which it lies and binds them firmly together, offering a strong resistance to any movement of the asphalt, and the expansive and contractive forces are exerted in trying to overcome this resistance.

## COMPETITION NEEDED IN NEWARK.

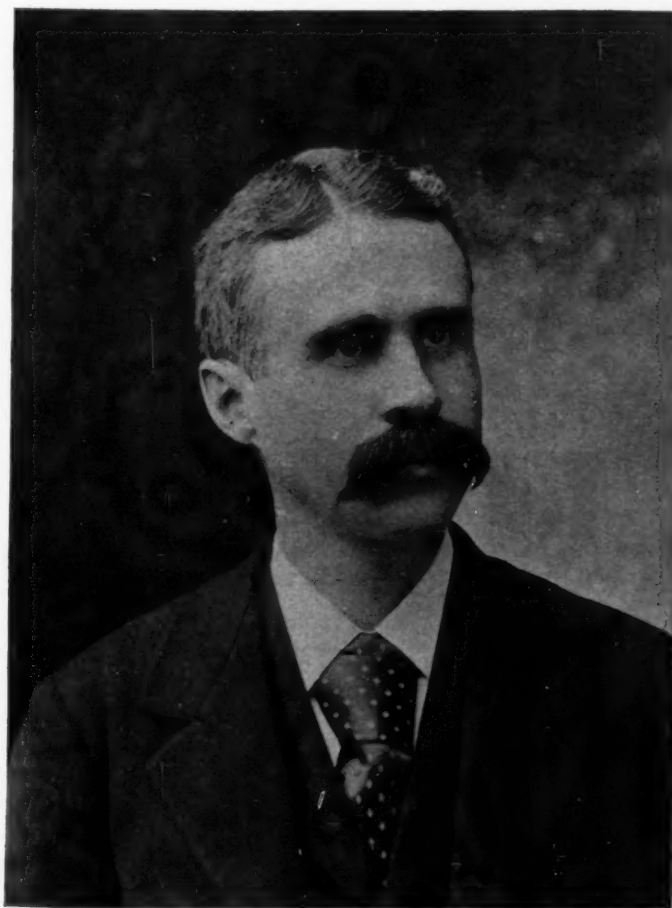
Mayor Seymour, of Newark, N. J., is of the opinion that his city has been paying too much for asphalt paving. He recently sent a letter to the board of street and water commissioners regarding the prices paid in Newark and other cities, and said that the reason that the price paid in Newark was larger than elsewhere was because Newark permitted one company to do the work without competition.

A table of comparisons was sent with the letter. It showed that Newark paid \$2.61 a square yard; New York, \$2.05; Louisville, \$2.32; Brooklyn, \$1.80; Detroit, \$2.29; Peoria, \$1.87; Syracuse, \$1.68.



## A PROGRESSIVE ADMINISTRATION.

One of the best examples of progressive municipal government in this country is furnished by the city of Boston under the able administration of Mayor Josiah Quincy. In the management of public markets, the maintenance of large and beautiful parks, the construction of sewers and improved streets, water supply, fire and police protection and other necessary public charges, Boston has always furnished examples worthy of emulation. During the term of Mayor Quincy all these departments of municipal work have been maintained at the highest standard, and many innovations for still further improving the condition of the city and its people have been made. Probably the most important of the new improvements is the big subway, by the use of which the street cars will be removed from the surface of the crowded down-



JOSIAH QUINCY, MAYOR OF BOSTON. 92

town thoroughfares, and the construction of which was fully described in a recent issue of CITY GOVERNMENT. Other innovations are the establishment of a municipal printing plant, the introduction of public baths, the initiative steps toward abolition of grade crossings, the creation of a department of electrical construction, the construction of the Strandway, and numerous improvements in all the municipal departments.

The recent address of Mayor Quincy to the council reviewed in the most comprehensive style all that was accomplished last year by the municipal administration and suggested a number of new improvements. For the purpose of showing the progressive spirit of the administration we make the following quotations from Mayor Quincy's address.

## PUBLIC BATHS.

If the city council acts promptly Boston can, within the coming year, take a place in advance of any other American city in respect to public bathing facilities. While the needs of the different sections of the city in respect to shower-baths should be first met, I believe that one or more large swimming-baths should later be added. Some free instruction in swimming, particularly for the benefit of the scholars in our public schools, may well be furnished by the city. The public bathing-beach at the Marine Park, South Boston, has been so largely used during the past year that the need of a greater number of bath-houses is already felt, and it is hoped that these can be provided before the opening of another season. I believe that the smallest possible charges should be made for the use of the facilities required for bathing on the open beach, in order that as large a number of people as possible may enjoy this great privilege afforded by our water front. In many of the cities of continental Europe baths have for some time been introduced in school-houses for the use of the scholars, with such excellent results that they have become an established feature. The teaching of habits of personal cleanliness, which is thus made possible, should be no unimportant part of public instruction.

## PLAYGROUNDS.

I know of no direction in which the expenditure of a few hundred thousand dollars will do more for this community, through the healthful development of its children and young people, than by the judicious provision of properly located and equipped playgrounds. If one-twentieth of the sum which Boston has spent upon her magnificent park system could be devoted to the acquisition in proper localities, throughout the city, of numerous areas to serve as playgrounds, the investment would, in my opinion, bring in a still larger percentage of return in the shape of healthful physical development and social well-being. I believe that every ward of this city should, as nearly as possible, be provided with some place where children can play, and where outdoor sports and contests can, to some extent at least, be carried on. The city of Paris recognizes so fully the public importance of healthful outdoor recreation that directors of sports are employed to assist in organizing them. Boston may well adopt the same enlightened policy and become the first city in America in respect to public exercise and athletics.

## ELECTRICAL CONSTRUCTION.

Believing in the principle that the city should do directly for itself, without the intervention of contractors, as much of its own work as it may be found practicable and economical so to do, I have during the past year brought entirely under the control of a city department a branch of public work, of constantly growing importance, which had heretofore been intrusted to private contractors. Last May an electrical construction division was established under the department of public buildings, and heads of departments were instructed to apply to this division for all electrical work, whether coming under the head of repairs or new construction. An expert practical electrician was appointed chief of this division, and its work has assumed considerable

importance. I think that it can safely be claimed that the total cost of doing the electrical work of the city will at least be no greater on the present basis, while the quality of the work done and of the stock used, which is a matter of great importance, will be better.

#### MERCHANTS' MUNICIPAL COMMITTEE.

In my inaugural address a plan was outlined for the formation, on a representative basis, of an advisory committee, designed to establish "a strong and permanent connecting link between the city government and the leading business organizations of the city." A body designated as the Merchants' Municipal Committee was accordingly constituted, consisting of two representatives of the Associated Board of Trade, and one representative each of the Chamber of Commerce, the Clearing House Association, the Merchants' Association, the Real Estate Exchange, and the Shoe and Leather Association. I have derived valuable assistance during the year from frequent consultations with the public-spirited and broad-minded business men who were selected as members of this committee. Regular meetings have been held every two weeks during most of the year, and many municipal questions of large importance have been discussed and voted upon. The experiment of constituting this committee has fully answered my expectations, and I am satisfied that an organization of this character should be continued permanently in some manner in connection with the city government.

#### A STATISTICAL DEPARTMENT.

I desire to recommend strongly the establishment by the city of a statistical department, to be under the charge of an unpaid commission. Full information has been secured as to the organization and methods of work of the municipal statistical offices which have for many years been successfully maintained by Paris, Berlin and other leading Continental cities. No American city, I believe, has yet established such an office, and there is an opportunity for Boston to secure the credit of leading the way in this very important line of work. Such a department should supplement the work already done in the line of statistical inquiry by the governments of the United States and of the commonwealth, supervise and systematize such work of this character as is already undertaken by other departments of the city government, such as the board of health, and also pursue special lines of investigation of its own. Another important feature of its work should be the systematic collection and tabulation of comparative statistics of other municipalities.

#### FREE TEXT BOOKS IN DETROIT.

Secretary Chamberlain, of the Detroit board of education, reports that the first year the free text-book system was tried the books cost \$26,325 for 21,276 pupils, or \$1.24 per pupil, estimating on the total membership of the schools. In 1894 the cost was 65 cents per pupil; in 1895, 55 cents. Last year, with a membership of 26,560, the text books cost about \$13,000, or 48 cents per pupil. The average for the four years is 64 cents per pupil, which is said to be about one-quarter of the cost to parents if the free text books were not in use. Books are supplied under the system to the primary and grammar grades only, none being bought for the high school. There are now about \$200,000 worth of text books in the schools belonging to the board of education.

#### ILLUMINATING GAS AT SIXTY CENTS.

BY JAMES B. TANEY, UNITED STATES CONSUL AT BELFAST.\*

The discussion in some of the cities in the United States of the cost of illuminating gas has suggested that it would be of interest to learn that the city council, which controls the gas works of Belfast, has reduced the price to consumers from 66 to 60 cents per 1,000 cubic feet, beginning with the current quarter. Here gas bills are collected quarterly, so that the reduction takes effect from the first of the year.

This charge is subject to the following discounts, providing the account for the preceding quarter is paid on or before the 30th day of January, April, July and October of each year:

	Per cent.
50,000 and not exceeding 100,000 cubic feet.....	5
100,000 and not exceeding 200,000 cubic feet.....	10
200,000 and not exceeding 400,000 cubic feet.....	15
Above 400,000 cubic feet.....	20

The reduction in price was contemplated last year on the ground that the profits were so large (£67,377 9s. 1d. = \$327,892.10 for the year ended June 30, 1896) that the current price was unjust to the consumers.

For an intelligent understanding of how so large a net revenue was realized at 66 cents per 1,000 cubic feet, less discount, a condensed reproduction of the official statement of the receipts and expenditures for the financial year ended June 30, 1896 (figures reduced to United States money), is herewith subjoined:

Receipts.	
Sale of gas.....	\$659,812.37
Less discounts.....	\$53,295.54
Bad debts.....	1,209.24
	54,504.78
	\$605,307.59
Public lighting of streets, buildings, etc.....	88,713.61
Less cost of lighting and repairing public lamps.....	24,226.05
	64,487.56
Sales of coke, breeze, etc. (less labor, \$30,118.22).....	162,821.61
Sales of tar.....	28,650.15
Sales of ammoniacal liquor.....	21,668.97
Sundries.....	369.21
	213,509.94
Total.....	\$883,305.09
Expenditures.	
Coal (87,536 tons of 2,240 pounds, including all expenses of depositing same at works).....	\$270,534.58
Purification and sundries, including labor.....	17,898.22
Salaries of engineer and assistant.....	6,740.10
Wages (carbonizing).....	69,024.23
Repairs and maintenance of works and plant (including renewal of retorts), machines, apparatus, tools, materials, and labor....	30,306.90
Coal and coke used for steam boilers.....	2,504.15
Carburetted water gas:	
Oil (1,073,018 gallons).....	43,632.20
Wages and fuel.....	27,906.25
Repairs of carburetted water-gas plant.....	1,300.94
Salaries of chief inspector, inspectors, and clerks in department.	8,475.81
Repairs, maintenance and renewal of main and service pipes, including materials, laying, paving, and labor.....	7,040.69
Repairing, renewing, and refixing meters.....	18,407.20
Rents (grounds and offices).....	26,578.16
Salaries of cashier, accountant, clerks, office keepers, and messengers.....	11,714.06
Salaries of collectors.....	7,541.70
Sundries.....	5,907.80
Balance carried to net revenue account (profit).....	227,892.10
Total.....	\$883,305.09

The disposition of the net revenue was in sundry ways, such as for new works, meter investments, contributions to public library, parks, etc., interest on mortgages, sinking fund, stock dividends, etc.

\* From advance sheets of United States Consular Reports, April number.



It will be observed that the largest item of expense is for coal, which costs \$3.09 per ton (2,240 pounds) delivered at the works.

Below is submitted some additional information furnished, at the request of this consulate, by the courtesy of the manager of the works :

	Cubic Feet.
Coal gas (year's output).....	802,911,000
Carburetted water gas (year's output).....	324,460,000
Total gas made.....	1,217,371,000

The cost per 1,000 cubic feet of the several items required in making the product until it passes into the gas holders was :

	Cents.
Coal (less residuals).....	6.34
Purification.....	1.45
Salaries.....	.546
Carbonizing (wages).....	7.24
Wear and tear.....	3.348
Fuel for boilers.....	.276
Total .....	19.584

Or a small fraction over 19½ cents.

The cost of production has been very much reduced since the use of cannel was displaced by the introduction of carburetted water gas, the quantity being nearly one-third of the output of coal gas. With the new system the works are enabled to continue the present increase, for the coal gas alone would yield only about sixteen candle power, whereas the combination produces a gas of eighteen candle power.

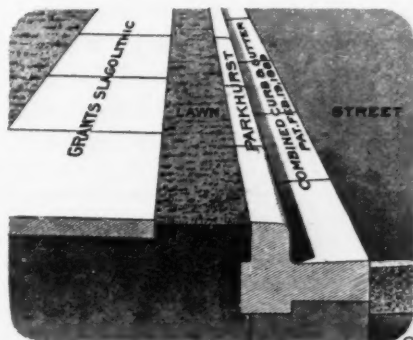
In this last presentation of the cost of manufacture no account is taken of any expense connected with the running of the gas works, except the items which directly enter into the manufacture of the article until it passes into the gas holders, as the object is to show simply the cost of the material and labor required for the manufacture of gas ready for consumption. The conditions are so distinctly dissimilar in each locality that the extraneous outlay in connection with the supply to the consumer must vary, especially when it is a question of public or private control.

### THREE-CENT FARES AT INDIANAPOLIS.

The Indiana Legislature has passed a bill, to go into effect April 15, making it unlawful for the street railroad company in Indianapolis to charge more than 3 cents for carrying a passenger. The law provides that any officer or employee of the company who shall receive more than 3 cents for carrying a passenger may be arrested and fined ; it provides also that any person who is charged a fare in excess of 3 cents may bring a civil suit against the company and collect damages to the amount of \$100. It still further provides that, after having paid a fare of 3 cents the passenger shall be entitled to receive a transfer ticket to any line in the city. There will, doubtless, be trouble when the attempt is made to enforce this law. The act will be contested on the ground that the city, by contract with the company, in the franchise granted by the city council, gave it the right to charge a fare of 5 cents, and that the Legislature cannot enact a law abrogating a private contract. Good lawyers differ upon the question raised, and there is prospect of a fine legal fight.

### COMBINED CURB AND GUTTER.

The accompanying cut shows an end or sectional view of the Parkhurst combined curb and gutter, of which



over 300 miles have been laid in cities of the Western and Central States with satisfactory results. It has also been laid in Albany, Rochester, Syracuse and Pittsburgh. This combined curb and gutter is made of crushed granite, trap or limestone and Portland cement. It costs no more than ordinary stone curb with gutter, and, as every 9 lineal feet of the gutter takes the place of 1



MERIDIAN STREET, INDIANAPOLIS, IND. 74

square yard of street pavement, the saving, when high-priced pavements are laid, is a considerable item. It makes a continuous body of stone, with no seams or joints for water to penetrate through or under, thus preventing settling of either pavement or curb. It gives a smooth gutter surface in which the water can run freely. It is neat, clean and durable. Buntin, Shryer & McGannon, of Indianapolis, are the makers.

### SCRANTON HEALTH REPORT.

The annual report of the board of health of Scranton, Pa., shows that during 1896 there were 1,525 deaths, 1,607 births, 270 cases of diphtheria, 142 of scarlet fever and 58 of typhoid fever. Estimating the city's population at 103,000, the death rate per thousand was 16.1; excluding accidental deaths and still births the rate was 14.99.

## ALCATRAZ STREETS IN NEW YORK.

The accompanying pictures show streets paved with Alcatraz asphalt in New York city. The block on Twenty-first street, from Broadway to Fifth avenue, was paved in 1895 by the California Asphalt Company, of New York. The pavement consists of 1 inch of binder and 2 inches of wearing surface, laid over the old granite blocks. The contract price was \$3.06 and the pavement was guaranteed for fifteen years. The east side of the Boulevard, from 92d to 106th street, was paved by the same company in 1896. In this case the pavement consists of 1 inch of binder and 2 inches of wearing surface, laid over the old macadam, which was brought to the proper grade by the use of a dressing of broken stone, coated with coal tar pitch. The contract price was \$2.98, and the pavement was guaranteed for fifteen years. In considering the contract prices for these pavements it must be considered that the work was done under a fifteen-year guarantee; 30 per cent. of the entire cost is held back from the contractors for that period of time, and they were required to furnish a bond for the total sum.

The Alcatraz asphalt used in the paving of these two streets is mined and refined by the Alcatraz Company at their works in Carpinteria, Santa Barbara County, Cal. It is an exceedingly pure material, of unusual value for paving purposes. The paving cement prepared from it is particularly adhesive and elastic. Pure liquid asphalt is used for fluxing the crude Alcatraz asphalt and preparing the paving cement, instead of petroleum residuum, which is employed by other asphalt companies for this purpose. The superiority of this liquid asphalt over petroleum

residuum as a flux lies in the facts that it is exceedingly rich in the valuable petroline products and is absolutely unaffected by water. On account of these properties it adds greatly to the adhesiveness of the paving cement and prevents that rotting in the gutters which is so noticeable in the case of asphalts fluxed with petroleum residuum.

Alcatraz asphalt has been used in the paving of a large

number of streets in New York city, Brooklyn, Philadelphia, Omaha, Baltimore, Utica and other large cities throughout the United States, there being, in round numbers, about 1,000,000 square yards of it in use at the present time. So satisfactory has been the result of the pavements constructed with it in New York city that the specifications for 1897 make Alcatraz asphalt one of the two standard materials by which all other asphalts are to be judged as to their suitability for paving purposes.

In every city into which the Alcatraz Company has introduced its material a decided fall has been noticed in the prices of asphalt pavements.

Alcatraz asphalt being a product of the United States, equal in quality and as low in price as any imported asphalt, is certainly destined to come into the most extensive use of any paving

material in this country. The mines of the Alcatraz Company in California are inexhaustible.

The main offices of the Alcatraz Company are in the Crocker Building, San Francisco, and the Eastern offices are at 57 East Fifty-ninth street, New York. Connected with these offices are some of the most competent paving experts in this country, from whom city officials may secure any information they may desire.



ALCATRAZ PAVEMENT ON TWENTY-FIRST STREET, NEW YORK CITY. 95



## TO FILTER POTOMAC WATER.

The board of water commissioners of Cumberland, Md., composed of Mayor William Mellinger, C. James Orrick, Thomas McCann and Dr. M. A. R. F. Carr, have for some time been investigating the subject of water filtration with a view to providing a system for the purification of the local water supply, which is taken from the Potomac River. The members of the board have been assisted in their researches by Churchill Hungerford, the well-known New York engineer, and Dr. William Royal Stokes, the eminent bacteriologist of Baltimore. After a most careful examination of all possible methods for purifying the polluted water of the Potomac the commissioners reported the following recommendation to the council :

a bell-shaped cap, which surmounts the main, which will spread it out as it falls. The raw water will remain in the settling basins for forty-eight hours, and a large proportion of the silt and suspended earth matter will settle to the bottom of the basins, and carry with it considerable of the suspended organic matter. From these settling basins the water will flow onto the bed of the sand filters. These sand filters are basins of earth, made by excavating the area to be enclosed, and, with the dirt excavated, building embankments around it. These embankments are made water-tight by clay puddle through their centres, for protection against which the banks are ripped on the side. On the bottoms of these basins drain pipes are so placed as to drain off the water as it passes through the filter beds in such a way as to regulate the speed with



ALCATRAZ PAVEMENT ON EAST SIDE OF BOULEVARD, NEW YORK CITY. 76

"The method proposed is that of aeration, sedimentation and filtration. The plan proposed is : To secure land immediately above the intake, between Paca street and the river, and to build there two settling basins, having a capacity of 3,000,000 gallons each, and three sand-bed filters of a total area of 43,560 square feet. A duplex compound condensing pump of 4,000,000 gallons daily capacity, located in the pump-house, will be used to pump the raw water through a 14-inch pipe from the intake to the settling basins. Air will be forced into the pipes with the water, and traveling with it for 1,600 feet under the pressure, will be thoroughly mingled with it, and be largely effective in oxidizing the organic matter held in suspension. For further aeration the force mains will project 8 feet above the surface of the water in the settling basins and the raw water will be discharged over

which it passes through the sand. Above these pipes are laid layers of broken stone or river pebbles, graduated sizes, the largest size at the bottom and the smallest size on top. On this top layer of stones, about the size of peas, 18 to 24 inches of fine sharp sand, carefully selected and graded, is placed. This layer of sand constitutes the effective portion of the filter. In the course of a few days, the organic matter in the water, being strained out of it by the sand forms, upon the top of the filter a thin layer or blanket of ooze, and in practice this blanket is found to remove from the water over 70 per cent. of the dissolved organic matter and over 98 per cent. of bacteria of the ordinary types, and over 99 per cent. of the bacteria of typhoid fever and sewage.

"After being thus filtered and purified the water is taken up by lines of collecting pipes and conveyed

through a main to the wells of the force pumps. The cost of this plant, as estimated by Mr. C. Hungerford, the engineer employed by the commissioners, is as follows :

10,900 cubic yards embankment, . . . . .	\$3,815.00
3,260 " " sand placed, . . . . .	5,868.00
3,000 " " crushed stone placed, . . . . .	1,728.00
3,000 " " riprap placed, . . . . .	1,800.00
81 " " masonry, . . . . .	405.00
Vitrified pipe, . . . . .	712.80
3,200 feet 14-inch iron pipe, . . . . .	5,120.00
Gates, checks, valves, etc., . . . . .	680.00
One 4,000,000 gallon pump engine, . . . . .	2,600.00
Well, . . . . .	100.00
Rearrangement of intake, . . . . .	230.00
Incidentals, . . . . .	1,500.00
	<hr/>
	\$24,558.00
To this add probable cost of land, . . . . .	6,000.80
Total cost, . . . . .	<hr/>
	\$30,558.80

"This estimate of land damage contemplates purchases of only so much of the land as will be required to accommodate this plant, and while the proposed plant has a capacity in excess of our present requirements, yet an increase in the supply will be needed in a few years, and we therefore recommend the purchase of the entire tract, so as to provide for future needs and protect the system from encroachment of dwelling houses or factories. We should suppose the entire tract would cost \$8,000."

#### BRICK PAVING FOR ALLEYS.

The use of brick for paving purposes is so comparatively new, and its merits and demerits so little known, that it seems almost a necessity for its advocates to use the public press as a means of educating the public. While there may be valid objections to brick on a residence street on account of noise, and on a heavy traffic street because of its non-durability, neither these nor any others have ever been raised against the use of good vitrified brick for the pavement of alleys. In the city of Chicago at least seven-eighths of the improved alleys have been paved with cedar blocks. In the down-town district the area paved is about equally divided between granite, cedar blocks and asphalt. Nearly all alleys in Chicago, when paved, are lowest in the centre, *i.e.*, the gutter for the escape of water is in the middle. When paved with asphalt the uric acid has a decided tendency to destroy the material, and produce disintegration. In Washington, D. C., where so many streets have been paved with asphalt, so well recognized is this fact that of late all asphalt streets have the gutters paved with brick. In Cincinnati the law prohibits the use of any other material than brick in alleys. In first cost brick ranks third, granite block and asphalt only being greater. In freedom from dust, healthfulness and ease of traction brick easily take first rank, and of the three durable pavements, stone, asphalt or brick, the latter stands first as giving foothold for horses. In freedom from absorption brick also take first rank, and it is this essential that should give brick the preference for paving alleys. It has been clearly demonstrated that in cost of maintenance nothing equals brick. Taking everything into consideration it does seem strange that in so many of our

Western cities a material so cheap, healthful and useful should fail of universal adoption. The advocates of brick pavement are handicapped by the fact that the durability of a pavement made of good brick cannot be definitely stated. None has ever yet worn out. For ordinary alleys it is unquestionably good for severe service for a term of twenty-five years, with very little if any repairs.

PAVER.

#### LOCK-JOINT PAVING BLOCK.

George E. Briggs, of Pittsburg, Pa., is the inventor of a lock-joint brick paving block that may be destined to popularity. The block is practically twice the size of a common brick, and it is therefore necessary to lay only

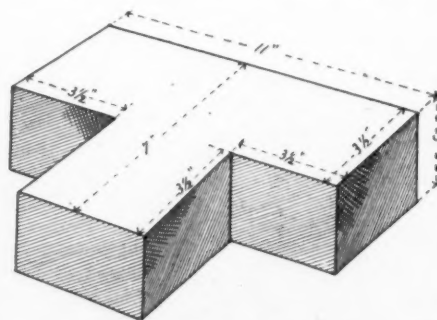


FIGURE 1. 97

one course for a strong and enduring roadway. It is said that the great strength and solidity of the pavement, due to the perfect locking of the blocks, make a concrete foundation unnecessary. The inventor claims that the pavement only requires a foundation of a few inches of broken stone and a cushion of a couple of inches of sand. Figure 1 shows the dimensions of the Briggs block. Fig. 2 illustrates a constructed roadway. It will be seen that each row bonds

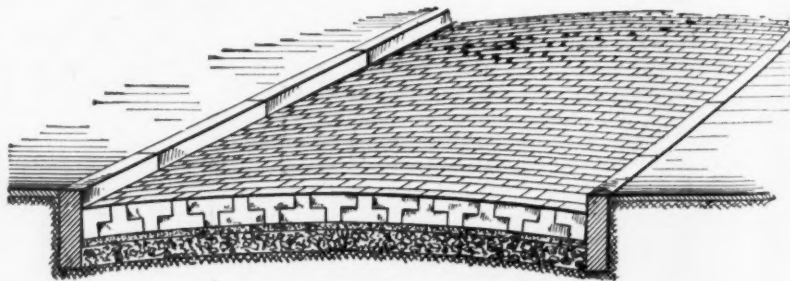


FIGURE 2. 98

thoroughly, while an additional factor in bonding is secured by reversing the blocks in alternate rows. The strain is widely distributed. It will be observed that in the case of a block with the top of the "T" exposed the strain is transmitted to approximately two and one-third times the wearing surface, each arm resting on an adjacent block; in the case of the next block, with the leg of the "T" exposed, the strain is transmitted to about three times the wearing surface.

A street pavement of this lock-joint block was recently laid in the city of Leeds, England, and it is probable that Mr. Briggs' invention will soon be given a fair trial by American municipalities.

Col. W. F. Morse, who has for ten years past been identified with the disposal of waste by cremation and has built and operated some of the largest plants for this work, has re-established this branch of engineering work at 56 & 58 Pine street, New York.



## BERMUDEZ STREETS IN ST. PAUL.

In St. Paul, Minn., where the climatic conditions run to extremes, asphalt paving has been given a most severe test with very satisfactory results. The first asphalt pavement was laid in 1886, on Summit avenue, the best residence street of the city, and it remains in good condition to-day. It was not until a few years ago that the St. Paul authorities decided that asphalt was a suitable material for paving business streets where the traffic is moderately heavy. Since 1895 the old wooden block pavements on nearly all of the retail thoroughfares have been replaced with asphalt, giving the business centre of the city a beautiful, cleanly appearance. The illustration on this page shows East Sixth street, upon which the best class of retail stores are located. It is paved with Bermudez asphalt, on a 6-inch concrete foundation, laid by Hennessy & Cox, local contractors. This pavement

the St. Paul officials to drop prejudices still existing and admit several other asphalts which have been proved as good as the best.

## CITY ENGINEERS ON PAVING.

Edward B. Guthrie, chief engineer of the department of public works of Buffalo, N. Y.—“For asphalt paving we have used Trinidad lake, Trinidad land, German rock and Kentucky rock mixed with Sicilian with good results. Our specifications admit the above brands, and also Bermudez, because in twenty years' experience we think these are the best. The specifications have been altered in late years to admit additional brands of asphalt, and the result of competition has been a reduction of about 20 per cent. in prices within the last year. Kentucky rock asphalt alone does not give satisfaction, but when mixed with Sicilian gives good results. We have had



BERMUDEZ PAVEMENT ON EAST SIXTH STREET, ST. PAUL, MINN. 99

was laid in 1895, at a cost of \$2.30 a square yard, and after being exposed to the most severe climatic and traffic conditions, it is now in perfect condition.

It was not until 1895 that the St. Paul Board of Public Works permitted the use of any asphalt except the genuine Trinidad Lake, the commissioners being of the opinion that no other brand would stand the strain of a Minnesota winter.

Early in 1895, when it was proposed to repave many of the down-town streets, the property owners insisted upon being given the benefit of competition among paving contractors, and the specifications were altered so that bids for Trinidad Lake, Bermudez and Utah asphalts were considered. The result was a considerable reduction in prices and the letting of contracts for paving several streets with Bermudez material. Their satisfactory experience with Bermudez asphalt may possibly prompt

brick pavements only four years, and I cannot express an opinion on them. Medina sandstone of uniform size, laid on a concrete foundation, is an excellent pavement."

H. D. Ludden, city engineer of Detroit, Mich.—“I can conceive of no street, except those of the very heaviest traffic, on which asphalt pavement would not be suitable, provided the grade was not too steep. Our specifications call for ‘asphaltum from the pitch lake in the state of Bermudez, in the republic of Venezuela, and no asphalt to be inferior in quality to that obtained from the pitch lake of the island of Trinidad.’ Prices for asphalt paving in Detroit have been reduced from \$2.70 in 1892 to \$2.30 in 1896. We have had no experience except with Trinidad lake, Bermudez and a limited amount of so-called land asphalt.”

George Platt city engineer of Erie, Pa.—“I consider asphalt a suitable material for paving all streets except

those with heavy grades. We have only used Trinidad lake asphalt so far, although the specifications admit Bermudez. Having never used any asphalt except Trinidad lake, I am not prepared to make comparisons. We receive bids for sheet asphalt pavements complete, including excavations, 6 inches of concrete and curbing. Prices have gone down from \$2.98 to \$2.59 per square yard, complete. We have no brick pavement that has been laid long enough to give it a through test, but I am satisfied that a fire-clay brick that can be vitrified will give the best of satisfaction."

Charles M. Slocum, city engineer of Springfield, Mass.—"Our experience with paving materials has been confined to brick and granite blocks. We are better pleased with vitrified brick than any other material. They were first laid here in 1892, although we have used home-made brick for a great majority of the street crosswalks for twenty-five years or more. Granite blocks are not very satisfactory on account of their roughness and noise; they are not as cleanly as the smoother forms of pavement. Our first asphalt pavement was laid last season; not down long enough to determine results."

M. J. Blanding, city engineer of Galesburg, Ill.—"Our city has had no experience with pavements other than those of brick. Brick pavement has given satisfaction because it is economical and durable. Pavements laid in 1884 are in fair condition now."

#### ASPHALT IN PITTSBURG.

The asphalt investigation committee appointed by councils of Pittsburg, Pa., reported in favor of the adoption of the New York specifications. Heretofore the specifications for asphalt work in Pittsburg have virtually precluded all competition, but the adoption of the New York specifications will give all the asphalt companies a fair chance for Pittsburg contracts. This is a change that will save the property owners of Pittsburg many thousands of dollars. The time for monopoly in asphalt work is rapidly passing away, as city after city is following the example of New York in permitting the use of all the natural asphalts. Following is the full report of the Pittsburg committee:

*To the Select and Common Councils of the City of Pittsburg:*

GENTLEMEN—Your joint committee appointed to investigate the character and relative merits of Trinidad Lake and Bermudez Lake asphalts for street-paving purposes, having held a number of meetings and received oral and documentary evidence bearing on the question before them, would respectfully report the following as the result of their investigation:

These two asphalts are used for street paving in Washington, D. C.; New York, Brooklyn, Utica, Syracuse, Detroit, Cleveland, Dayton, Indianapolis, St. Paul and a number of other cities, from whose officials in charge of paving department letters were submitted to this committee, and from these letters it appears that the Bermudez Lake asphalt has been in use four years in some of the cities named and is regarded as at least equal to the Trinidad Lake asphalt for street-paving purposes.

While the scope of our investigation was confined to these two asphalts, the testimony incidentally developed that there were other natural asphalts which are equal to Trinidad or Bermudez. It was then resolved by your committee to widen the scope of our investigation so as to cover all natural asphalts used for street paving. We

therefore requested Director of Department of Public Works E. M. Bigelow to communicate with the different cities mentioned above and any others he chose, and to give us the benefit of his information and experience and any suggestions he might wish to offer, which request he complied with. After the reading of his report, the clause relating to a guarantee of five years was amended to read "a guarantee of five years on all new streets paved with asphaltum and ten years on all streets repaved with asphaltum," and by unanimous vote his report as amended, is made a part of your committee's report, and is herewith attached.

Your committee recommend that when proposals are advertised for repaving of streets the kind of asphaltum determined upon shall be specifically stated in the advertisement, and proposals received only on kind of pavement specified.

It is the distinct understanding of this committee that the adoption of the New York city asphalt specifications (as suggested by the director) admit the use of asphalt mined from Sicilian mines at Ragusa and Ver-Wole, from the Swiss mines at Val de Travers, from the French mines at Seyssel and Mons, and the asphalt from the island of Trinidad, from Bermudez Lake, from Kentucky, from California, and of any other natural asphalt which will meet the requirements of the specifications.

#### WASATCH ASPHALTIC LIMESTONE.

Wasatch asphaltic limestone, or Utah asphalt, is rapidly coming into general use for street-paving purposes. Since 1892 upward of 250,000 square yards of pavement have been laid with this material, and the results have been highly satisfactory. The Wasatch asphaltic limestone mines are situated in the Spanish Fork Cañon, Utah, and are owned and operated by the Assyrian Asphalt Company, of Chicago. This Utah asphalt resembles, although it is superior to, the well-known Neuchatel; it runs from 10 to 30 per cent. bitumen, and in this respect is richer than Neuchatel. Last summer about 100,000 square yards of pavement of the Wasatch material were laid in the city of Chicago, and contracts for about 70,000 square yards in that city have been let for this season.

#### TO PRESERVE THE PAVEMENTS.

C. D. Boardman, a member of the board of public works of Des Moines, Ia., has in view a plan for the better preservation of the city pavements. He wishes to secure the co-operation of the city council with the board of public works in prohibiting the tearing up of any pavement at any place by any person except an expert working with competent laborers under the board. The idea is not to allow any plumber or person or company to touch the pavement, but to have the city do the laying of pipes and digging of trenches therefor in the pavement to the curbing, and thus insure the return of the paving in as good shape as originally.

The pavements are constantly suffering from being cut up by Tom, Dick and Harry, whose sole idea seems to be to get the pipes down or up, as the case may be, and who pay little attention to replacing the paving in as good shape as it was originally. With the prohibition of that sort of thing and the tearing up and replacing of pavements in the hands of competent men under the board of public works, the pavements will be replaced properly and thousands of dollars saved.



## DOLLAR GAS BILL BEATEN.

Despite the fact that it has been clearly and positively demonstrated that the prices charged by the New York and Brooklyn gas combines for their output are exorbitant, the senate of the State has refused to pass the dollar gas bill. Whether or not there is any truth in the oft repeated statement that Thomas C. Platt owns the New York Legislature, the action of the senate in the gas matter certainly proves that the people really have no servants at Albany. Some day the American people, who are lovers of fair play and jealous of their rights, will openly revolt against such manifest partiality to corporate trusts as the New York State senate displays. There is scarcely a householder in the city of New York who does not know that he could justly demand of his representative in the Legislature to vote for the dollar gas bill, and if the will of the people had prevailed that

## MUNICIPAL VERSUS PRIVATE FINANCIERING.

BY M. A. GEMUENDER, DIRECTOR OF PUBLIC IMPROVEMENTS, COLUMBUS, OHIO.

It is the universal custom to complain of the exactions of the tax collector. Taxes are indeed burdensome to many and annoying to all. Just what a tax rate should be in order that the proper needs of any community may be supplied is a hard matter to determine. But the opinion prevailing is certainly that taxes as they now exist are far too high. If taxes are too high, then some one is at fault. Who? "Public officials," say the people, "for they spend all the money." Now, while not trying to refute the pretty general belief that these officials frequently have mixed up in their make-up a grain or two of dishonesty or incapacity, yet it is my purpose to show, as well as brief space will permit, that if matters are going wrong they are not altogether to be blamed for



BRICK PAVEMENT ON EAST MAIN STREET, ELMIRA, N. Y. 100

measure would have been passed unanimously. The trouble with our law-makers at Albany is that their considerations run in the order—self first, party second and people last.

## AN ELMIRA BRICK STREET.

The illustration on this page shows the brick pavement on East Main street, Elmira, N. Y., laid by Beardsley Brothers, contractors. This pavement is made of Clearfield pavers, and it is a handsome and durable roadway. Some of the best improved streets in Philadelphia are constructed of Clearfield pavers, which have also been successfully and extensively used in Sunbury, Tyrone, Phillipsburg, Bradford, DuBois, Altoona and many other cities in Pennsylvania and surrounding States. This excellent roadway material is manufactured by the Clearfield Clay Working Company, of Clearfield, Pa.

imperfect results. The conditions and strait-jacket system under which they are compelled to perform their duties are oftentimes such that if managers of private institutions were compelled to operate under them they could make but a poor showing for their concerns.

The theory upon which our various forms of government, national, State and municipal, are constructed calculates to retain in the hands of the people all possible power, and in the furtherance of this general plan in order to discourage the creation of any official class, which might have a tendency to act independently of the will of the people, such public officers as are selected are given but short terms of office. For example, the mayor of our city, our chief executive, is elected for a term of two years only, and the law further expressly stipulates that "no person shall be eligible to the office of mayor for more than four years in any period of six years."

Councilmen and members of the board of education are elected for a similar period of time, although there is no restriction as to the number of consecutive terms any particular person may serve. The very evident intention is to compel a frequent appeal to the public for its indorsement and support. Probably there was no intention at the outset to inaugurate a system of uncertain tenure of office, but the practical outcome of it all has been to place in power a new set of officers every year or two. It has been remarked by some of our writers, by way of satire, that "whereas any handicraft, such as bootmaking, requires a long apprenticeship, yet the art of governing and making the people's laws is easy. This comes by nature." Unless some such belief as this is current how are we to account for the ease and readiness with which the people substitute one set of officials for another? When we think of the many changes continually going on it would certainly seem to an outsider that experience is valueless in the managing of city affairs. How long would any of our business organizations maintain a successful existence if they were to inject into their codes of regulations a by-law demanding a radical change in the personnel of its executive staff not less than once in every four years? It would be unfair, however, to state as a fact that the American public have failed to recognize the liability to err upon the part of its servants, for if only a fraction of the adverse criticisms on official acts which the press and public speakers put forward is true, then it is certain that the public is very much alive to their shortcomings. A cursory glance alone at the laws and ordinances in force, the sole purpose of which is to limit the amount of discretion to be vested in an officer, would make clear that citizens have a constant fear that their government will not be conducted in the wisest manner.

A city council can levy taxes for specific purposes only. That is to say, when a levy is made it must be stated for what purpose it is to be expended. We have a levy for the maintenance of the police department, another and distinct levy for the fire department, another for "general expense," another for parks, and so on. The levy for "general expense" is calculated to meet expenditures not otherwise directly provided for, but the law rigorously limits such a levy to the narrow confines of one mill. These levies, when collected, are placed in separate funds, known as the "police fund," the "fire department fund," "the general expense fund," etc. All moneys collected in pursuance of these levies are deposited with the city treasurer and make up the general city balance. The finance committee of the council, when it compiles its annual budget, can only estimate the expenditures liable to be incurred in any department during the ensuing year. The amount of money which can be actually collected on any particular levy is also a matter of guess. Hence, before a year has closed one fund may contain a surplus of cash, while another, on the contrary, may be entirely exhausted. The law now steps in and prevents absolutely any transfer of money from one fund to another, or the use of any money for any other purpose than that express purpose for which it was levied. As a result, if the dictates of the law be strictly adhered to, unless the police or fire departments, for example,

were temporarily discontinued, the city would either have to dishonor its paper by suspending payment of its obligations or it must borrow money and pay out interest at the same time it may possess a treasury that is well stocked with idle funds. In a private business a manager is at liberty to use all or any of the cash the business owns in the discharge of just obligations, and it would be deemed the height of folly to borrow money and pay interest thereon as long as there was an unused balance in the bank. That in the interests of economy and in the exercise of the most ordinary business sense these laws relative to the use of the general treasury balances for tiding over a deficiency in any particular fund are at times evaded is true, but any officer who does so evade them, be his motives ever so honest and his results an undoubted gain to the city, nevertheless violates the law at his own individual peril and that of his bondsmen, a risk that is hardly fair to expect officials to assume.

Passing now to an examination of the financiering on the part of municipalities through their officers, it is safe to say that there exists no plan or definite policy whatever. There is no fixed notion as to when to pay cash and when to issue bonds. Either course is resorted to, as caprice may dictate. When a city undertakes a permanent improvement, such, for example, as constructing a main trunk sewer, a city hall or a school building, an improvement which is to last and do service for many years to come, it is manifestly unfair to taxpayers to saddle the entire cost of construction on any one particular year, so that succeeding generations may reap all the accruing benefits and advantages without any expense themselves. Neither would it be just on the other hand to issue bonds in payment of such improvements and then leave these bonds to be redeemed by a tax levy in that particular year during which they mature. If it be the purpose to assess taxes on beneficiaries as nearly as practicable in proportion as they receive benefits, then the burden of paying for extraordinary outlays of this kind, that cannot be considered as current expenses, should be spread over a reasonable term of years. This can be and should be accomplished by issuing bonds for the full cost and rigorously requiring each year in turn to pay its share by a pro rata contribution to the sinking fund. Again, each fiscal year should pay its own running expenses. Any person buying property, say in the year 1897, should not be called upon to pay for the fire or police protection or other benefits this property enjoyed in previous years and while it was in possession of another. Neither should he shift his burdens and obligations upon his successors. The theory or plea here outlined, that current expenses should be paid as they are incurred and that permanent improvements should be bonded for a term of years is certainly based on justice, and will meet with the acceptance of probably nine out of every ten citizens. Nevertheless, if we review our city reports, we find that no system whatever has been steadily followed. Permanent improvements, like that of the workhouse, for example, have been paid out of one or two annual tax levies, and we have what is worse, outstanding \$365,000 in deficiency bonds. It would cost our city now \$1,000 per day for the next year to come to make up deficiencies caused by previous fiscal years failing to pay their run-



ning expenses. The first of these outstanding deficiency bonds were issued in 1888. Who is to blame? I would reply that it is partly the fault of city officials and partly that of the citizens themselves. During the life of our municipal corporation there have been in office many honest and capable men, men who during the short official career permitted them by law and popular sentiment have done all that lay in their power to start our financial operations in the right direction. Unfortunately, for reasons already given, and the further fact that the executive and legislative branches together rest in the hands of many, instead, as they do in a private business, in few hands, all measures actually adopted are more or less a compromise, and are very seldom what any one or two men would recommend if they were operating for themselves alone. Where there are many masters, and these changed every year or two, it becomes very difficult, if not altogether impossible, to place any line of policy upon a permanent footing. When our present mayor (as Mr. Allen is now about to retire from political life I trust I may speak to him without evidencing bad taste) assumed his duties as the city's chief executive a short time ago, it was with the announced intention of conducting the city's affairs after the same economical methods employed in private enterprises. Hardly had he taken his seat when an emergency arose which required prompt action. Naturally his first impulse, due to his previous training, was to act and act at once. But, fortunately or unfortunately, the law interfered by requiring that the measure under consideration should first be submitted to the city council for its sanction, which body, in turn, was compelled by law to consume at least seven days before it could announce its conclusion. When this state of affairs became apparent to the mayor, he smiled and said: "Business methods indeed! How long would my own private business progress if I were compelled to consult nineteen partners every time I wished to buy even a load of hay?" And this was meant with no discourtesy to the legislative branch of our government. It was simply an outburst of vexation at restraints placed upon prompt action, to which he was not accustomed as a manager of large private interests.

The code of the State teems with laws for checking and restraining the action of the executive and legislative branches of our city government. The Legislature of the State, whether rightfully or wrongfully, undertakes to regulate the actions of municipalities even to such a degree as to direct in detail how they shall proceed to sprinkle and sweep their own streets, and also do many other things which, to most citizens, would have the appearance of unwarranted interference.

To sum up, in order to retain the power of government as much as possible in the hands of the people, it has been the policy to make the terms of office short. Practice has shown that frequent appeals to the public endorsement meant frequent changes of public officers; frequent changes of officers entailed certain evils. To reduce these to a minimum, the people have resorted to laws and ordinances limiting the discretionary powers to be vested in their officials.

In the statements above made I do not wish for one

moment to be understood as finding fault with these restraining laws and ordinances. Doubtless they are an outgrowth of long and costly experience, and possibly the best that conditions will permit of. I merely wish to make plain that citizens, when they complain of the tax rate and throw the entire blame upon the men whom they have placed in power, should make some allowance for the trying circumstances under which they essay to perform their duties. In any private business, when a man is placed in a position of responsibility the presumption is that he will faithfully labor for the welfare of the concern. In the discharge of his duties he is permitted to do anything he sees fit in the interests of his business that is not expressly forbidden by law. Therefore he has vested in him a large discretionary power, and it is upon the manner in which he uses this power that the tenure of his office depends. Not so with the public officer. When he assumes control the presumption is evident that he is very fallible. His duties are prescribed for him in detail, and instead of being permitted to do anything but that which he is expressly forbidden, he can do only that which he is expressly charged with doing. In curtailing his freedom to act as his sense of propriety may dictate, while he is hereby prevented to a certain extent from committing great sins, yet at the same time he is seriously hampered in his efforts to secure the best results. Services under such conditions can never far exceed mediocrity, and it is totally unfair to berate public officers for lack of results, without giving this fact our consideration.

### TAXES AND FINANCE.

—City of Providence, R. I., 4 per cent. bonds, amounting to \$1,550,000, were sold on March 25 at 114.751.

—The Chicago Council has increased the salary of the Mayor from \$7,000 to \$10,000 a year. At the same time the comptroller's salary was raised from \$5,000 to \$6,000.

—Comptroller Gourley, of Pittsburg, Pa., has sent to councils his report for the fiscal year ended January 31, 1897. It shows that the gross amount of the bonded debt of the city is \$14,928,201.87, against which may be credited \$4,707,369.56, the amount of cash and securities in sinking funds.

—The Board of Aldermen estimates that it will cost \$6,359,991.77 to maintain the city government of Buffalo, N. Y., during the current year. The total amount of resources is \$2,850,703.10, and therefore it will be necessary to raise \$3,509,288.67 by general taxation. This is a reduction of about \$80,000 from the amount of the tax levy last year.

—The Chicago budget for 1897 appropriates a total sum of \$16,579,116, an increase of \$536,943 over the total appropriation last year. The largest items in the budget are: School board, \$6,530,600; police, \$3,356,710; fire department, \$1,562,520; department of public works, \$1,468,948; interest account, \$905,428; street lamp fund, \$487,616; public library, \$244,357.

## CITY GOVERNMENT.

*A Monthly Magazine for City Officials, Tax Payers, and others interested in municipal affairs.*

PUBLISHED BY

CITY GOVERNMENT PUBLISHING COMPANY,

150 NASSAU STREET, NEW YORK.

WESTERN OFFICE, 358 DEARBORN STREET, - - - CHICAGO.

NEW ENGLAND OFFICE, 911 CARTER BUILDING, - - - BOSTON.

CLARENCE E. STUMP, B. F. GILKINSON, H. J. GONDEN,  
Pres. and Treas. Vice-Pres. and Sec'y. Editor.

### TERMS OF SUBSCRIPTION.

In the United States and Canada.....per annum, \$3 00  
In all Foreign Countries....." 4 00

Subscriptions payable in advance, by check, P. O. money order or express money order, to order of CITY GOVERNMENT PUBLISHING CO.

### RATES FOR ADVERTISING SPACE QUOTED ON APPLICATION.

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*Municipal news and information regarding changes of city officials will be greatly appreciated.*

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*Address all communications to*

*City Government Publishing Company,  
150 Nassau Street, New York.*

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### NOTE AND COMMENT.

The mayors and intendents of the cities and towns of South Carolina will hold a convention at Spartanburg on May 5. The purpose of the meeting is to bring forth an exchange of views on all topics concerning municipal government, such as control or ownership of water and light plants, methods of street improvement, etc. A discussion of this kind will doubtless prove of much value to all concerned and tend to improve the condition of the municipalities represented at the convention.

CITY GOVERNMENT suggests a convention of the mayors of all the cities and towns of the United States. The health officers, the city engineers, the building inspectors,

the fire and police chiefs and the waterworks officials have their national organizations, and all realize that great benefit results from their annual gatherings. The mayors have a greater interest in municipal matters than any other class of officials; the scope of their labors is wider and touches upon every branch of municipal work. A national convention, affording an opportunity for the mayors of this progressive country to exchange their views upon the various important questions involved in the management of our municipalities, could not fail to be of material benefit to the officials and their constituents. We would be pleased to hear what our readers think of this suggestion.

Nearly every municipality between the Atlantic and the Pacific has awaited reformation at the hands of the theoretical reformers with a patience that is absolutely pitiful. No city of any consequence whatever is without a "good government club," "municipal league" or an association of some other name which has for its nominal object the perfection of the municipal government and for its real object the inflation of its leading members. There are reasons—very good reasons, perhaps—for the existence of reform clubs. They afford such wide-open opportunities for all those who imagine they have grievances to air. Deprive the average municipal reformer of the escape valve for his effervescent eloquence and he would surely develop into a huge ball, into which it would be extremely dangerous to stick a pin. The municipal league or reform club meeting is a function that deserves well of society; it should be encouraged, promoted, perpetuated. It furnishes the opportunity for that unopposed flow of words which alone can relieve an unhealthy and dangerous congestion of wind; it patronizes that peculiar gentry to whom complaining has become chronic and thus removes them from association with better humanity; it demonstrates to observing men on the outside the folly of talking too much, and, let us be thankful, it is powerless to inflict any harm whatever. Why, then, should we not protect the municipal reform meeting?

While partisan daily newspapers are giving contradictory opinions as to the cause of the election of the second Carter H. Harrison to the mayoralty of Chicago, we are disposed to believe that the young man's success at the polls is due in a large measure to the fact that he inherits many of the excellent qualities of character possessed by his distinguished father. Although in his life-time the first Carter H. Harrison was shamefully maligned by the daily press of Chicago, he was a gentleman of high character and a scholar of rare attainments. His personal popularity was more potent at the polls than any platform ever devised by a political party. He was, indeed, Chicago's best mayor, and we expect to see his son become known as "the next best."

Newark, N. J., recently had an experience where a man—a Polack—who wanted to send a letter to his sweetheart in Poland, and was told to "put it in the red box," happening first upon a fire-alarm box, opened the door, pulled the hook, and calmly waited for the postman



to come and get his letter. This is very amusing, of course, but it is expensive fun. The fashion of painting letter-boxes and fire-boxes the same color is quite confusing to some persons, and it is the cause of many expensive and needless runs by fire departments.

The Rev. Charles S. Starkweather has been elected mayor of West Superior, Wis., as a joke. Several years ago this reverend gentleman was elected to the mayoralty of his town and was subsequently impeached, having confessed that he had extorted money from the sporting fraternity and from city employees. At the opening of the recent municipal campaign he sought the nomination for mayor on all the party tickets, but was turned down with ridicule in all the conventions. He then announced himself as an independent candidate, made speeches promising all kinds of reform, and was elected. His candidacy was never taken seriously until enough people had voted for him for fun to elect him. They do some very funny things in West Superior, but this joke is probably the most hilarious that ever happened, and we hope the people of West Superior will enjoy it fully.

City Clerk B. L. Short, of Kansas City, Kan., was a candidate before the Republican primaries for the mayoralty nomination recently. It seems that at one time in his career Mr. Short jilted a young woman and married a widow. In the State of Kansas it is not a crime to jilt a young woman—or an old woman, for that matter—nor does the law prohibit a man from surrendering his heart and hand to a widow. But there are some queer laws in Kansas; one, for instance, that gives women the right to vote at municipal elections. So when Mr. Short appeared as a candidate for mayor the women of his town had an opportunity to down him which they did not neglect. They turned out to the polls in great numbers, made the jilting episode of a dozen years ago a live issue of the day, and defeated Mr. Short handily. "So, there, now!" who says woman does not know how to handle the ballot?

From the little town of New Brighton, Pa., comes a suggestion of some value to school and health officials. The board of education of that town will construct a bathroom in each of the four public school buildings. Children who do not have the proper attention in the way of bathing at their homes will be sent to the bathroom whenever the teacher deems advisable.

Mayor Quincy, of Boston, has appointed a board of municipal statistics, probably the first municipal department of this kind in the United States. It will be the duty of this new board to gather and preserve statistics of all the departments of Boston and other cities. The members of the board are Lawrence Minot, Davis R. Dewey, Rodman Weld, Sumner B. Pearmain and Edward M. Hartwell.

Morris W. Mead, chief of the electrical bureau of the city of Pittsburg, was a caller at the CITY GOVERNMENT office last month.

#### NEW CITY OFFICIALS.

The large cities in which municipal elections were held in the first week of April were Chicago, St. Louis, Cincinnati, Detroit and Cleveland.

In Chicago there were four formidable candidates for mayor—Carter H. Harrison, Democrat; Judge Nathaniel Sears, Republican; John M. Harlan, independent Republican, and Washington Hesing, gold Democrat. Harrison was elected by a plurality of 75,434 over Harlan and a majority of 1,635 over all. The mayor-elect is the eldest son of the former Chicago mayor of the same name. Ernest Hummel, for city treasurer; Miles J. Devine, for city attorney, and William Loeffler, for city clerk, all Democrats, were elected. The Democrats also elected a large majority of their aldermanic candidates.

At St. Louis the Republicans succeeded in electing their entire ticket with the exception of three candidates for the house of delegates. Henry Ziegenhein was elected mayor by a majority of 5,981 over Edwin Harrison, Democrat, and Lee Meriwether, bolting Democrat. Other heads of departments elected were: Comptroller, Isaac H. Sturgeon; auditor, Isaac M. Mason; treasurer, Charles Scudder; register, Henry Besch; collector, Charles F. Wenneker; president board of assessors, A. H. Frederick; president board of public improvements, Robert E. McMath; president council, E. F. Meier.

The people of Cincinnati voted out the Republicans and voted in the Democrats. Gustav Tafel, Democrat, was elected mayor by a majority of 7,404 over Levi C. Goodale, Republican. Other Democrats elected were William H. Jackson, judge Superior Court; Edward Schwab, judge Police Court; Thomas J. Noctor, clerk Police Court; Ellis J. Kinkead, corporation counsel; Henry P. Boyden, auditor; Edward O. Eshelby, treasurer. The new board of legislation will contain sixteen Republicans and fifteen Democrats.

Hazen S. Pingree will be succeeded as mayor of Detroit by William C. Maybury, Democrat, who was elected by about 500 majority over Albert F. Stewart, the Republican candidate selected by Mr. Pingree. During the campaign Mr. Maybury declared himself in favor of Pingree's chief hobby—three-cent car fares.

Mayor Robert E. McKisson was re-elected at Cleveland, defeating John H. Farley, the Democratic candidate, by a comfortable majority. The Republicans will retain control of the council.

#### RESULTS IN OHIO.

Columbus—Samuel L. Black, Democrat, mayor; Samuel J. Swartz, Republican, police judge; E. B. Armstrong, democrat, justice of the peace.

Canton—Mayor James Allen Rice, Democrat, was re-elected.

Toledo—Samuel M. Jones, the Republican candidate for mayor, was elected by a majority of 518.

Norwalk—F. W. Vandusen, Republican, was re-elected mayor.

Steubenville—Mayor Riley, Republican, was re-elected.

Zanesville—Lewis H. Gibson, Democrat, was elected mayor.

Gallipolis—Matthew Merriman, Democrat, was the successful candidate for mayor.

Youngstown—The contest here was for waterworks trustee, and Henry W. Smith, Democrat, won.

Springfield—John M. Good, Democrat, was elected mayor by about 600 majority.

Ironton—Enoch F. Tyler, Republican, will be the new mayor.

Marion—S. Mehaffey, Democrat, was elected mayor.

Fostoria—C. W. Hughes defeated Mayor Boley, and for the first time in twenty years this city will have a Democratic mayor.

Portsmouth—Charles C. Glidden, Democrat, was elected mayor, defeating R. Row, the present incumbent.

Wooster—Lemuel Jeffries, Democrat, re-elected mayor.

Elyria—Mayor M. H. Levagood, Republican, re-elected.

Warren—Mayor George Predmore, Republican, will have another term.

Chillicothe—P. White Brown, Democrat, was elected mayor.

#### NEW MICHIGAN MAYORS.

Benton Harbor, Dr. John Bell; Albion, A. L. McCutcheon; Sault Ste. Marie, William Webster; Gladstone, R. H. Mason; Iron Mountain, J. M. Clafford; Petoskey, M. F. Quaintance; Flint, Milton Pettibone; St. Louis, Parker Merrill; Traverse City, W. W. Smith; Lansing, C. J. Davis; East Tawas, Milo Eastman; Ionia, A. A. Ellis; Kalamazoo, A. M. Stearns; Adrian, J. Will Kirk; Hudson, H. C. Hall; St. Ignace, John Mulcrone; Mt. Clemens, A. T. Donaldson, Marquette, James E. Sherman; Negaunee, P. W. Kirkwood; Ishpeming, James Trebilcock; Manistee, Thomas Smurthwaite; Ludington, App M. Smith; Big Rapids, William T. Dodge; Menominee, William Holmes; Monroe, George F. Heath; Greenville, Cass T. Wright; Muskegon, Ansel F. Temple; Holly, W. R. Smith; Holland, Gerritt J. Diekema; St. Clair, J. George Zink; Marine City, Tyler Morley; Owosso, Edwin Gould; Corunna, A. S. Marshall; Three Rivers, C. A. Dockstader; Ypsilanti, N. B. Harding; Ann Arbor, C. E. Hiscock; Cadillac, F. A. Diggins; Niles, F. W. Richter; Eaton Rapids, H. P. Webster; Bessemer, W. I. Price; Gladstone, R. H. Mason; Charlotte, Charles Bennett; Mt. Pleasant, M. Devereaux; Jackson, Martin G. Loennecker; Midland, F. A. Townsley; Stanton, Levi Camburn; Pontiac, F. J. Kelly; Grand Haven, J. V. B. Goodrich; Mason, C. W. Van Slyke; Sturgis, Charles Sturgis; Coldwater, A. A. Sherman; Ironwood, Dr. J. A. McLeod.

#### OTHER MAYORS ELECTED.

Illinois—East St. Louis, M. M. Stephens; Galesburg, Forrest F. Cooke; Quincy, J. A. Steinbach; Rock Island, T. J. Medill; Springfield, Loren E. Wheeler; Warsaw, John H. Finley.

Minnesota—Winona, E. K. Tarbell; St. Cloud, Samuel MacKrem; Litchfield, F. E. Bissell; Henderson, E. L. Welch; Rushford, Peter Miller.

Maryland—Laurel, Edward Phelps; Frostburg, Joseph Baer; Manchester, Dr. John F. B. Weaver; Union Bridge, William Wood.

Great Falls, Mon.—R. J. Fitzgerald.

Larimore, N. D.—O. H. Phillips.

Evansville, Ind.—William M. Akin, Jr.

Huntington, W. Va.—W. F. Hite.

Davenport, Ia.—S. F. Smith.

West Superior, Wis.—Charles S. Starkweather.

Kansas City, Kan.—R. L. Marshman.

Topeka, Kan.—Charles H. Fellows.

#### BOOKS ON MUNICIPAL AFFAIRS.

"Municipal Problems," by Frank J. Goodnow, of Columbia University, is a work of more than ordinary interest to those who are studying the difficult questions involved in the government of our cities. Professor Goodnow, unlike the more presumptuous writers on the subject of municipal government, does not undertake to positively determine the proper methods for controlling the complex affairs of our municipalities, but he presents the problems and defines the conditions that must be considered in their solution in such a clear and forcible style that his readers are given an understanding of the subject which ought to enable them to draw their own conclusions as to what is best to do in order to secure an improved system of city government in this country. The author deals with every municipal problem from all sides, showing the impracticability of some theoretical solutions and the practicability of others as applied to existing conditions. Taken altogether, this latest work of Professor Goodnow's is a most valuable addition to political science literature, and it will doubtless accomplish a good end in imparting to the American public an almost thorough understanding of the important questions which must be met sooner or later in a regeneration of our municipalities. "Municipal Problems" is published by the Macmillan Company, New York.

The annual report of the department of parks of the city of Brooklyn for 1896 has been published in book form. The report contains all possible information about the extensive and beautiful public parks and parkways of Brooklyn—their acquisition, development and present condition, the method and cost of their maintenance, etc. It is, indeed, the most comprehensive and valuable report ever issued by the department and reflects great credit upon Commissioner J. G. Dettmer. The book is artistically printed and bound and contains a large number of excellent half-tone illustrations of park scenes.

#### MUNICIPAL REPORTS RECEIVED.

During the past month the following printed reports have been received at the CITY GOVERNMENT office:

Lynn, Mass.—Annual Report of the Auditor of Accounts. [1896.] From William F. Brackett, auditor.

Wilmington, Del.—Annual Report of the Chief of Police. [1896.] From John F. Dolan, chief.

Worcester, Mass.—Annual Report of the Police Department. [1896.] From James M. Drennan, chief.

Fall River, Mass. Twenty-third Annual Report of the Watuppa Water Board, [January 1, 1897.] From William W. Robertson, clerk.

Duluth, Minn.—Proceedings of the Common Council. [March, 1897.] From C. E. Richardson, city clerk.

Cumberland, Md.—Report and Recommendations of the Board of Water Commissioners. [March 1, 1897.] From William Mellinger, mayor.

Brooklyn, N. Y.—Annual Report of the Department of



Assessment. [1896.] From Barzillai G. Neff, president board of assessors.

Boston, Mass.—Address of Mayor to City Council. [January 4, 1897.] From Josiah Quincy, mayor.

New Haven, Conn.—Thirty-fourth Annual Report of the Fire Department. [1896.] From board of fire commissioners.

New Orleans, La.—Comptroller's Report. [July-December, 1896.] From P. Alph Rabouin, comptroller.

Lowell, Mass.—Bulletin of the City Library. [February, 1897.] From F. G. Chase, librarian.

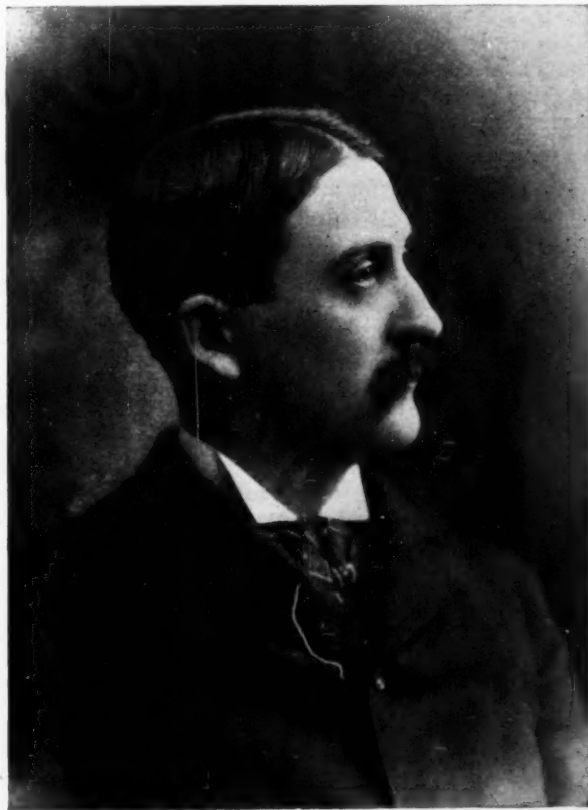
Ogden, Utah.—Third Annual Report of the Chief of Police. [1896.] From J. E. Davenport, chief.

New Haven, Conn.—Report of the Committee on Lamps. [1896.] From Henry Hopkins, clerk.

Brooklyn, N. Y.—Annual Report of the Commissioner of Parks. [1896.] From J. G. Dettmer, commissioner.

#### NEW MAYOR OF NIAGARA FALLS.

Arthur C. Hastings, who was recently elected mayor of Niagara Falls, N. Y., is a successful business man and not a politician. The only office he has ever held is that of police commissioner, to which he was appointed by



ARTHUR C. HASTINGS, MAYOR OF NIAGARA FALLS, N. Y. 101

Mayor Schoellkopf, last year. Mr. Hastings was born in 1860 in the city of Brooklyn and received his early education in the public schools of that city, after which he took an advanced course in Smith's Academy, of Hadfield, Mass. At the age of seventeen years Mr. Hastings went to Rochester with his parents and there took a course of instruction at a business college and then he entered his business career as a clerk in James Vick's seed concern. He remained there two years and then fell into his natural calling, when he entered the employ of the Rochester Paper Company. By strict attention to his duties he rapidly won his way into the confidence and esteem of his employers and was finally appointed secretary and

general manager of the mills. While in this position he was sent for by Mr. Quigley, who then was owner of the pulp mills that now form a part of the great Cliff Paper Company's plant, at Niagara Falls. Mr. Quigley's pulp mills were to be enlarged and made into paper mills as well, and to Mr. Hastings was left the responsibility of rearing the second largest paper mill in Niagara Falls. To-day he is the active head of that great mill.

A Niagara Falls newspaper says of the new mayor: "Bringing to the office of mayor that characteristic that has made him a successful business man, Mr. Hastings is bound to make a successful mayor for the city. He is not a politician, does not want political preferment, but he is willing to do his best to help the taxpayers reduce expenses and bring the city into a better financial condition. He has hosts of friends and few if any enemies. Those who have worked under him admire him the most, his simple, honest and straightforward dealings with all men inspiring at once confidence and trust."

#### PERSONAL.

—William E. Jenney is the new chief of the Lockport, N. Y., fire department.

—Alfred Tanner, a successful business man, has been elected mayor of Little Falls, Minn.

—John Myers, who was recently appointed chief of police at Portland, Ore., is a bank president.

—Harley S. Pulse, who was recently elected mayor of Lynchburg, Ohio, is only twenty-one years of age.

—T. J. Moulin has been elected secretary and treasurer of the board of fire commissioners of New Orleans, La.

—State Senator E. B. Weeks has been elected mayor of Oldtown, Maine. He defeated Mayor Hartwell in a close contest.

—O. E. Raidy, Sydney D. Davis and John Dardezette have been appointed police commissioners of Terre Haute, Ind.

—John P. Windolph, vice-president of the New York Board of Aldermen, was given a banquet by his numerous friends on the evening of March 26.

—J. G. C. Langenheim has been appointed chief engineer of the Allegheny, Pa., department of public works, to succeed W. G. Wilkins, resigned.

—Fred Lohmann has been elected chief of the fire department at Grand Island, Neb. The annual report of the department shows it to be in excellent condition.

—The engagement of George D. Todd, mayor of Louisville, and Miss Helen Durkee, of St. Louis, has been announced. The marriage will occur during the latter part of this month.

—The election at Fairmount, W. Va., resulted in the choice of N. S. Kendall for mayor, Frank P. Hall for recorder, and W. S. Hamilton, George Debolt, M. A. Jolliffe, James E. McCoy and W. S. Hayward for councilmen.

—W. C. Scarritt and R. H. Gregory have been appointed police commissioners of Kansas City, Mo. It is said that their appointment means a thorough reorganization of the department, including the retirement of Chief of Police Julian.

—John H. McClay, A. S. Tibbetts and Fred A. Miller compose the new fire and police commission of Lincoln, Neb. Mr. McClay is a banker, Mr. Tibbetts a lawyer, and Mr. Miller has acted as captain in both the police and fire departments.

—William C. Bullard, D. D. Gregory, J. H. Peabody and

Robert E. L. Herdman have been appointed fire and police commissioners of Omaha, Neb. Mr. Bullard is a lumber dealer, Mr. Peabody is a physician, and Messrs. Gregory and Herdman are lawyers.

—Dr. Arthur B. Ancker has been re-elected city and county physician and superintendent of the hospital at St. Paul, Minn., for a term of four years. Dr. Ancker has held this important position for a number of years, and his unanimous re-election is but a fitting tribute to his efficient services.

—George W. Duncan, G. Matthews, M. J. Hatcher and Arthur Bradley, of the city council of Macon, Ga., recently visited Savannah for the purpose of examining asphalt pavements. J. C. Root, representing the Warren-Sharf Co. at Savannah, entertained the visiting aldermen and demonstrated to them the superior qualities of asphalt as a paving material.

—William L. Strong, mayor of New York, celebrated his seventieth birthday on March 22. During the day many admiring friends of the mayor called at his office to express their congratulations, and a large number of floral testimonials were received. A handsome floral horseshoe, with the numerals "70" in blue immortelles, the whole surmounted by a miniature floral American flag, stood back of the mayor's chair. It was the gift of the Firemen's Benevolent Union. A basket of red and white roses was sent by Ernest Harvier, of the commissioners of the Park avenue improvement. Gen. James R. O'Beirne, commissioner of charities, presented another floral tribute, inscribed "To One of New York's Best Mayors."

—Major Edward Hughes, chief of the fire department of Louisville, Ky., recently visited the fire departments of San Francisco and other far Western cities. In a newspaper interview at Salt Lake City Major Hughes said: "A city should have good streets, a good police and a good fire department. No citizen, unless he be a croaker, should kick at the expense, but such things are seldom realized until a town is destroyed. Another thing, the fire department should be kept out of politics. A fireman should hold his position during good behavior and efficiency. We never change our men except for cause, and we have men in the department who have been there twenty-five and thirty years, and some of them have died in harness."

### LIGHT AND WATER.

—The appropriation for street lighting in Hartford, Conn., for the current year amounts to \$53,000.

—Lehigh, Pa., decided in favor of borough ownership of an electric lighting plant by a vote of 473 to 13.

—Here is an interesting fact taken from the annual report of the Aurora, Ill., water department: 1,845 consumers without meters paid a total sum of \$7,990.67, while 1,164 consumers with meters paid a total of \$16,132.12.

—H. W. Corbett, superintendent of the water works at Aurora, Ill., reports that during 1896 the receipts of his department amounted to \$24,789.94, which will pay the operating expenses, \$8,495.15, and interest on bonds, \$8,450, and still leave a surplus of \$7,844.79.

—The cost of street lighting in Milwaukee, Wis., for the past year was \$173,349.24, of which \$101,044.43 was for electric lights, and \$56,558.97 for gas lights. The cost of naphtha and oil lamps, with which many of the streets in the outskirts are lighted, was \$15,345.84.

—Mayor W. D. Sanford, of Batavia, N. Y., estimates that it cost \$5,138 to operate the municipal electric lighting plant in that town during the past year. The plant has in service eighty-nine arc lamps and 180 incandescent

lights. The average cost, per arc lamp, is about \$4.00 per month.

—Mayor Wanser, of Jersey City, N. J., has vetoed the resolution passed by the board of street and water commissioners on December 4, 1896, and concurred in by the board of finance on January 7, 1897, awarding to the East Jersey Water Company a contract for a permanent water supply.

—The city of Chicago has extended its contracts with the gas companies for furnishing street lights to January 1, 1898. The city is to pay \$20 per annum for maintaining each gas lamp. The gas companies are to pay the city 3½ per cent. of their gross receipts as compensation for privileges granted, the payments to be made quarterly. Last year the city received \$229,000 from this source of revenue.

—An ordinance has passed the council of Spokane, Wash., providing for the issue of \$40,000 of bonds for the purpose of installing a municipal electric light plant. Competent engineers have estimated that the city can provide its own electric lights at an expense of \$5.01 each per month, while it is now paying at the rate of \$8 per month.

—Charles A. Hague, 39 Cortlandt street, New York, chief engineer for the extension and improvement of the Trenton, N. J., waterworks, staked out the new reservoir at the site near Trenton on March 23. The basin is to have a capacity of 110,000,000 gallons, and work will begin at once. The contractor, Lewis Lawton, of Trenton, is preparing to put a large force of men at work.

—The council of Niagara Falls, N. Y., has instructed the city clerk to draw up an amendment to the charter giving the council power to enter into a fifteen-year contract with the Niagara Falls Water Works Company for filtered water for the North End, the amendment so to be drafted as also to give the city power to obtain the plant of the company by condemnation proceedings or purchase, the taxpayers' consent having been first given.

—The annual report of the water commissioners of Elgin, Ill., furnishes a most convincing argument in favor of municipal ownership. The receipts during 1896 amounted to \$27,500.52, while the operating expenses were only \$8,873.97. A new 6,000,000-gallon pumping engine, 11,146 feet of mains and 12 new fire hydrants were added to the works during the year. The commissioners are quite certain that they will be quite able to pay off the bonds issued to defray the expense of the construction of the works, amounting to \$118,000, out of the net profits.

—The Waterworks Souvenir, compiled and published by Crellin & Lovell, civil engineers of Des Moines, Iowa, contains a great deal of valuable information pertaining to the construction and utility of municipal water plants, besides a large number of excellent illustrations. The book is of especial interest to those who contemplate the establishment of waterworks, as it gives much technical and general information of practical use in making plans. Until the supply is exhausted, Crellin & Lovell will send out these books gratuitously.

—By readvertising for bids on vapor street lighting the board of control of Cleveland, Ohio, will be enabled to save the city over \$18,000. In reply to the first advertisement two bids were received, one of \$17.74 per lamp from the Sun Vapor Lighting Company, and one of \$16.20 from the American Development Company. The latter bid was accepted, but the company was permitted to back down and refuse the contract. On the second call the Sun Company bid \$16.98 per lamp per year, and John O'Neil bid \$12.47 per lamp for a period of nine months. After much wrangling, another readvertisement was ordered. In the third contest, the Sun



Company bid \$13.98 per lamp per year, and O'Neil bid \$15.10, the contract going to the Sun people. As the city is now paying \$17.95 per lamp for about 4,600 lamps, the saving under the new contract will amount to over \$18,000 in a year.

### FIRE AND POLICE.

—D. S. Cant has been elected chief of the fire department of Greeley, Col.

—F. J. Kearney has been elected chief of the fire department of Warsaw, N. Y.

—Superintendent of Police Bail, of Buffalo, has ordered all the members of his force to wear black neckties.

—John F. Malone has been appointed a member of the board of fire commissioners of Buffalo, N. Y., to succeed William N. Smith.

—The total expenditures of the Duluth, Minn., fire department last year amounted to \$116,218.13, including \$14,463.08 for interest and \$6,123.56 for hydrant rentals.

—The expenses of the Council Bluffs (Ia.) police department for 1896, as shown by the annual report, amounted to \$11,386.22, of which \$10,263.35 was for salaries. There were 845 arrests.

—Fire Marshal Winsor, of Providence, R. I., has invented a new nozzle for use on chemical engines. It is called the "Hold-up" nozzle, and is said to possess many points of superiority.

—The annual report of W. Y. Ellett, superintendent of the fire alarm system of Elmira, N. Y., is at hand. It shows that the Elmira system is keeping up with the rapid development of electrical improvements.

—The executive committee of the National Association of Fire Chiefs will meet in Kansas City on April 20 to arrange for a programme for the next annual convention of the association, to be held in New Haven in August. Chief Hale, of Kansas City, is the chairman of the executive committee.

—Chief of Police J. H. Clack, of Nashville, Tenn., in his annual report, says: "The police signal alarm system should be added to the department as soon as possible. The officers are required to report by telephone to headquarters at stated times during their tour of duty. Business men have complained that crowds collect in front of their places of business, attracted there by the arrest of some one, causing excitement which injures their business. Under the signal alarm system the city would own the service and would not depend on private telephones."

—The annual report of the police department of Duluth, Minn., for 1896 shows the expenses to have been as follows: Pay roll, \$51,384.04; repairs, \$209.58; other expenses, \$4,112.08; total, \$55,705.70, as compared with \$66,529.67 in 1894, and \$59,643.48 in 1895. There were 285 reports of lost or stolen property, aggregating in value \$8,523.69. There was recovery in 226 cases of over 80 per cent. of the property lost, or \$6,869 worth. Seventy-six fires were extinguished by members of the department, and 405 lost children were restored to their parents and seventeen persons were rescued from death by drowning. Arrests made were 1,866, and fines collected were \$10,270.79.

—Gardner Kellogg, chief of the fire department of Seattle, Wash., has placed glass cases for keys under all his fire alarm boxes. Time, down to seconds, is a big factor in the work of a fire department, and the idea of putting keys at the alarm boxes is an important step. Heretofore the keys at Seattle have been placed in houses nearest the boxes. It has been found by actual experience that the keys are not always there. This happens from various reasons; sometimes the keys are lost, and again people are prone to move from one house

to another, and it is not uncommon for them to take the keys with them. Sometimes when a key is wanted the people are not at home, but all this time the fire keeps on burning.

### HORSELESS FIRE ENGINE.

The Amoskeag steam-propelling fire engine, built for the Boston fire department by the Manchester Locomotive Works, was given a trial of its propelling power on the streets of Boston on the afternoon of March 23. The engine was run ahead, backed, turned around corners and was controlled at speed, notwithstanding its great weight of 8½ tons, more easily and safely than one of half its size could be driven by horses.

Its dimensions are: Length, 16 feet 6 inches; width, 7 feet 3 inches; height, 10 feet. It has a guaranteed water-throwing capacity of 1,350 gallons per minute. Its vertical boiler is 40 inches in diameter, 70 inches long, and contains 301 copper tubes 26 inches long and 1½ inches in diameter. It is encased in asbestos and wood, and covered with a Russia iron jacket with nickel-plated bands and trimmings.



STEAM-PROPELLING FIRE ENGINE. 102

A new feature of this engine is an expanded grate surface, which greatly increases its quick-steaming capacity. The cylinders exhaust into the chimney through a variable "exhaust tip" and are covered with nickel-plated caps, and the steam-chest sides are finished with nickel casings.

The front wheels are steered by means of a hand wheel through a worm and worm gear, and are handled with the greatest facility. The propelling gear is arranged so as to drive from one end of the crank shaft by two endless chains to each rear wheel through an "equalizing compound," on a shaft under the frame and in front of the boiler.

A similar engine of this style, made for the city of Hartford, threw, through 50 feet of 3½-inch hose, horizontal streams as follows: 1½-inch nozzle, 348 feet; 1¾-inch nozzle, 338 feet; 2-inch nozzle, 319½ feet.

## PUBLIC IMPROVEMENTS IN PARIS.\*

BY GEN. C. H. T. COLLIS, COMMISSIONER OF PUBLIC WORKS,  
NEW YORK CITY.

The illumination of Paris, both by gas and electricity, is in charge of private corporations. One company supplies all the gas consumed in Paris for all purposes, while there are at least half a dozen electric companies having monopoly charters for certain districts. The gas mains are all laid in the sewers and the electric light conductors are laid under the sidewalk. The price of gas is about \$2.04 a thousand cubic feet. As a result small hotels still supply their guests with candles and charge them in the bill. Larger hotels use electricity, but I saw none using gas. For municipal purposes, however, the price is a little over \$1. The lamplighters are appointed by the city authorities, but paid by the gas company, and each evening before starting out they may be seen in groups receiving their instructions from their foremen, these instructions being dependent upon the condition of the atmosphere, the moon, and the treasury. All domestic gas pipes are located on the outside of the walls of the houses, and not inside and out of sight as with us.

Strangers who are accustomed to confine their view of Paris to the grand avenues and boulevards and the passages with their brilliant little shops carry home with them the impression that the French metropolis is the best lighted city in the world, but this is far from being the fact. Those streets which are continually upon dress parade are superbly lighted, it is true, but the streets in the densely populated parts of the city, inhabited by the poorer classes, are as dingy as any streets I have ever seen. In some of them there is only just sufficient light to escape total darkness. Whether this is due to the fact that the gas companies get only half rates for street lighting or to Government economy I do not know, but I am sure that similar streets in New York are better lighted. The Champs Elysée is naturally the most brilliantly illuminated of all. Americans who drive at night from the Madeleine or the Rue de Rivoli, across the Place de la Concorde, up the Champs Elysée to the Arc de Triomphe, find a carriageway splendidly illuminated by gas lamps at short intervals, using Welsbach twin burners similar to those now in use on our own Boulevard, picturesquely supplemented with a never-ending stream of cabs with their yellow burning oil lamps, that make a pleasing contrast with the white of the gas, while thousands of cyclists dart here and there behind their little lights of all variety of color; but let the visitor take himself to Montmartre or the fringe of the Quartier Latin and he will find the butcher or the green grocer selling his provisions with the aid of a naphtha lamp or flambeau put up and maintained at his own expense. In the poorer districts the lampposts are at long intervals, but they are equipped with five and six-foot burners, while in New York ours have been only three-foot burners since gas was introduced seventy years ago.

I may say here in parentheses that it looks to me as though the Welsbach gas burner would become the approved method of Parisian illumination.

\* From an article by Gen. Collis published in the New York 'Sun.'

## PNEUMATIC TUBE SYSTEM.

The pneumatic tube is in general use throughout the city of Paris for the conveyance of what are called telegram cards. That is to say, letters written on a blank about the dimensions of our postal card, unsealed, cost six cents for delivery, but if written on another blank twice the size, which are to be folded and sealed, the charge is ten cents. In the busiest part of the day these cards take about half an hour for delivery. Paris being a circular city, this transmission involves a great many changes at different points, whereas in New York, which is a peninsula, nature has given us wonderful facilities for introducing this system. If, however, the telephone was in such general use in Paris as it is in New York, the necessity for this pneumatic tube would not exist to the extent it does today.

## STREET TRANSPORTATION OF PARIS.

The transportation system of Paris by omnibuses and tram cars, whether drawn by horses or other motive power, is in the hands of the Compagnie Generale des Omnibus under a monopoly charter expiring in 1910. From three to five years ago special charters were granted with the consent of the Compagnie Generale des Omnibus to the Tramways de Paris and the Compagnie Sud, but within the last eighteen months the latter companies have been absorbed by the parent organization, as is usual.

The total mileage of omnibus lines of all routes is 132, and the total mileage of streets used by these different lines is 101. The difference is accounted for by some omnibuses traversing the same streets.

The total mileage of tramway lines of all routes is 184, and the total mileage of streets occupied by tramways is 124. As all tramway lines are double track, the total mileage of single-track tramways is 248.

Paris, unlike New York, is comparatively circular, being from 7 to 8½ miles in diameter and with a circumference of 27½ miles of forts.

In addition to these tramway lines there are two lines of river boats, one on the right bank and the other on the left bank of the Seine. These lines have stations at distances not to exceed 350 yards on an average within the fortifications; they run up the river outside the fortifications to the northwest of the city, and in summer are availed of as the pleasantest mode of cheap transportation.

The omnibus fares are of two classes, first and second class, first class being for the interior and four places on the rear platform, and second class being the imperial, or roof. The fares for first class are invariably six cents, and "correspondance" or transfers are given from line to line, so that you can go around the city of Paris for one fare, or you can take lines back and forth, getting your "correspondance" at different stations, which will allow you, if you are ingenious, to travel fifty-four miles for six cents. No "correspondance" is given with second-class fares except on a very few lines, where by the additional payment of one cent you can get a "correspondance" over one additional line.



The omnibuses and cars of Paris are made to accommodate a certain number of persons, those supplied with seats, and the four standing places on the rear platform. When these places are filled the sign "complet" is shown on the car and the signal given to the driver, who then will stop for nobody to get on until signalled by the conductor that somebody wants to get off.

"Correspondance" or transfers are only available from regular stations along the route of the transportation lines, and all omnibuses or tramways, whether full or otherwise, stop at these stations. Passengers arriving at a station and wishing to take a certain other line of omnibus leaving that station go to the station master upon arrival and get a ticket marked with a number, and when the required omnibus arrives the number of vacant places is called by the conductor; those having the first numbers take the first places until that omnibus or tram car is "complet," and persons holding the following numbers have to wait for the next car. This sometimes necessitates a wait of fifteen minutes, but to the Frenchman this is not a serious matter, whereas an American would chafe under it, and perhaps go crazy. It is a government regulation that no passenger in excess of the authorized number shall be carried, and as the tax is upon gross receipts and the omnibus company runs few more omnibuses than can be filled or partially filled by the requirements of the route, the government can form a fair approximate idea of the amount of tax collectable.

#### REVENUE OF THE CITY OF PARIS.

The revenue of the city of Paris is derived from taxes of several kinds. First, there is the personal tax, which consists of a tax of ten per cent. on the amount of rent paid by the tenant. In addition to this the owner of the property has to pay a tax which goes to the national government. Second, there is the door and window tax, which is the tax imposed on the number of windows and doors on the exterior of every house. This tax, however, is limited to apartments paying a rental of more than 400 francs (\$80) per annum. Third, there is a license tax for transacting business. This varies according to the character of the business and the total amount of rental paid by the licensee on all places of business or residence occupied by him. Fourth, there is the octroi, which is imposed upon every article of consumption which comes within the fortifications of Paris, whether it be building material, food or fuel. In 1895 this octroi tax alone amounted to \$31,171,186, ranging as high in some months as \$3,500,000. Octroi is so much cash every night in the treasury.

The octroi is not a popular impost. It is looked upon solely as a burden placed upon the food and clothing consumed by the middle classes and the poor. It was in vain that I argued that a nation having a funded debt of \$6,000,000,000, paying annually over \$176,000,000 of interest, must get money from every possible source, and that spending this amount in thousands of louis to make Paris the most attractive city on the globe, not only paid back the sous to the people from whom it had been collected, but brought millions of francs in the pockets of visitors to be annually expended among the working

classes. And when I suggested that the abolition of the octroi would not cheapen commodities and might deprive the poor man of power to purchase them if it did, I was met with a storm of socialistic indignation which prompted me to change the topic to a less inflammable subject.

As an illustration of the scrutiny of the officials in collecting the octroi, I may say that, upon arriving in Paris, four canvasback ducks and half a dozen partridges sent to me by friends upon my departure from New York had to pay a toll of 40 cents for the privilege of being eaten at my hotel.

#### POSTAL COLUMNS.

I was much interested in the new letter box and advertising columns recently introduced.

This system works under the authorization of the Postmaster-General with the consent of the municipal council of the cities which adopt it, and consists of a column of ornamental iron arranged to contain a letter-box (also a box for printed matter and parcels, if desired), surmounted by a lantern; this lantern is divided into spaces framed for advertisements on glass and illuminated during the night by electricity or other convenient method, thereby immediately identifying its exact location to any person having need of its uses. The columns are designed to be placed along the sidewalk curbs of the main streets in cities.

These iron column letter boxes have been adopted by the French postal department and the municipal authorities of Paris as well as by eighteen other cities in the provinces, such as Bordeaux, Chalons, Dijon, Reims, Eprenay and Angers. In Paris 529 columns have been installed and are in service, 72 are in process of construction and erection, while fully 1,000 is the number estimated as necessary to equip the city. They are particularly noticeable at the railway termini, which localities are most frequented by strangers, and in the railway stations throughout the department of the Seine.

Having been adopted in France in 1893, their employment since that time has shown the following advantages to the postal department and the public: The department realizes a considerable economy in the cost of letter boxes, as the proprietor bears all the expense of construction and setting up of complete columns with the exception of the locks, which must be of regulation pattern. In some instances they have been the means of shortening the time of collection over certain fixed routes, as, owing to their prominence, a smaller number will answer the requirements of the service. The proprietor, however, agrees to set up as many and in such localities as the Postmaster may direct.

The convenience to the public and especially to strangers in being able instantly to locate the nearest letter box amounts, after short usage, to a necessity. While not primarily designed for the purpose of street illumination, the columns give a material addition.

The columns, as they exist in Paris, have been constructed from designs furnished by the architect of the city, M. Fourrige, but they are not as æsthetic as one would suppose, considering that they are of Parisian design.

## TRADE NOTES.

—Butler, Pa., has given an order for an up-to-date Gleason & Bailey hose carriage.

—The Gamewell fire alarm system has been successfully installed at Kingston, N. Y.

—New York City has ordered forty more hameless steel horse collars of the Gleason & Bailey Manufacturing Co.

—The second order of six helmets was recently shipped to Chief Henry Heinmiller, of the Columbus, Ohio, fire department, by the Vajen-Bader Co.

—Chief B. J. McConnell, of the Buffalo, N. Y., fire department, placed his second order for two more Vajen-Bader patent smoke protectors recently.

—The Buffalo fire department has just received a new aerial hook and ladder truck, built by the La France Co., of Elmira. It has an 85-foot extension ladder.

—The Water Witch Fire Company, of Wilmington, Del., has purchased a combination hose wagon and chemical engine from Charles T. Holloway, of Baltimore.

—The fire commissioners of Springfield, Mass., have ordered a new steamer of a capacity of 800 gallons per minute from the Waterous Engine Works, of St. Paul, Minn.

—The Partrick & Carter Company, of Philadelphia, were among the successful bidders for supplies required by the electrical bureau of that city for the current fiscal year.

—New York City has contracted with the Gleason & Bailey Manufacturing Company for another lot of trussed ladders to replace the old-style solid ladders for hook and ladder trucks.

—A small trussed model ladder, weighing only 2½ pounds, will sustain the weight of four men. Chief Joyner, of Atlanta, Ga., witnessed a test recently at the office of Gleason & Bailey.

—The board of public works of Wheeling, W. Va., has awarded the contract for furnishing standard wire cut fire brick to McMahan, Carter & Co., of New Cumberland, W. Va., at \$7.40 per thousand.

—With the aid of a Vajen-Bader patent smoke protector, Fireman "Billy" West, of truck No. 1, saved the life of Mrs. H. Roberts, who was overcome by smoke on the afternoon of March 11, in a burning rooming house at 713, 715 and 717 Central street, Kansas City, Mo.

—The Union Akron Cement Co., of Buffalo, N. Y., is furnishing the Star Brand Akron cement for the new building of the Buffalo Street Railroad Co. and the new No. 1 schoolhouse, and the fireproofing in the Otto Building, the Evans Building and the Lenox Flats, all at Buffalo.

—Theodore H. Colvin, of Providence, R. I., has commenced work on his new foundry building. This building will be 102 feet wide and 180 feet long, and will be a complete and modern foundry building in every respect. The steel work is being furnished and erected by the Berlin Iron Bridge Company, of East Berlin, Conn.

—Some time since an engineer in a large factory called the attention of a visiting expert electrician to the electricity in a big driving belt, and was quite surprised when the expert informed him that the electricity was caused by the belt slipping. The expert added that it was simply a wasting of power and could be prevented by applying Dixon's traction belt dressing, made by the Joseph Dixon Crucible Co., Jersey City, N. J. This dressing was applied and the electricity disappeared at once. Electricity in belts is not only a waste of power, but is also an element of danger by fire.

—The Central Manufacturing Co., Chattanooga, Tenn., manufacturers of cross-arms, insulator pins and brackets, lately received orders for several plants on the Pacific Coast and also for some in Old Mexico. The company expects to do a large exporting business during the year, as inquiries from foreign countries are increasing.

—The Dickson Manufacturing Company, of Scranton, Pa., have commenced the construction of a new boiler shop 130 feet wide and 225 feet long. This building will have a steel framework throughout. The sides will be covered with corrugated iron and the roof with composition roofing on plank. This building, when completed, will be without doubt the handiest and best equipped shop of its kind in the country. The steel work was designed and will be furnished and erected by the Berlin Iron Bridge Company, of East Berlin, Conn.

—The Gleason & Bailey Manufacturing Company has just issued a handsome little book of designs. It contains miniature photographs of a number of the beautifully constructed hose carriages, wagons and carts, chemical engines, hook and ladder trucks, etc., manufactured by the company. By consulting this book prospective purchasers of fire apparatus are enabled to select designs most suitable to their requirements. The book is printed and illustrated in that artistic style for which the Gleason & Bailey Company is noted in all of its work.

—One of the handsomest and most interesting catalogues to reach this office this year comes from the F. C. Austin Manufacturing Co., Chicago, makers of all kinds of road machinery. This catalogue describes and illustrates the rock crushers, road rollers, reversible road machines, street sweepers, street sprinklers and other articles manufactured by the Austin Co. The history of the Austin concern dates back to 1849, and ever since that date the house has been a leader in its line, and its road-making machines have become famous from one end of the country to the other. The Austin machines are sold by the Austin & Western Co., Limited, of Chicago.

—J. T. Fanning, consulting hydraulic engineer, Minneapolis, Minn., is constructing an 8,000 horse-power water power and electric transmission plant on the Missouri River in Montana. He is preparing plans for a 5,000 horse-power water and electric transmission plant on the Upper Missouri, a similar plant in Canada and a large water power in New England. His recently constructed works include an 18,000 horse-power water power at Great Falls, Mon., and a 15,000 horse-power water power at Spokane, Wash., both of which are largely used electrically. At Austin, Tex., he has completed a 10,000 horse-power water power, including the city water works and the city electric lighting system, now in full operation.

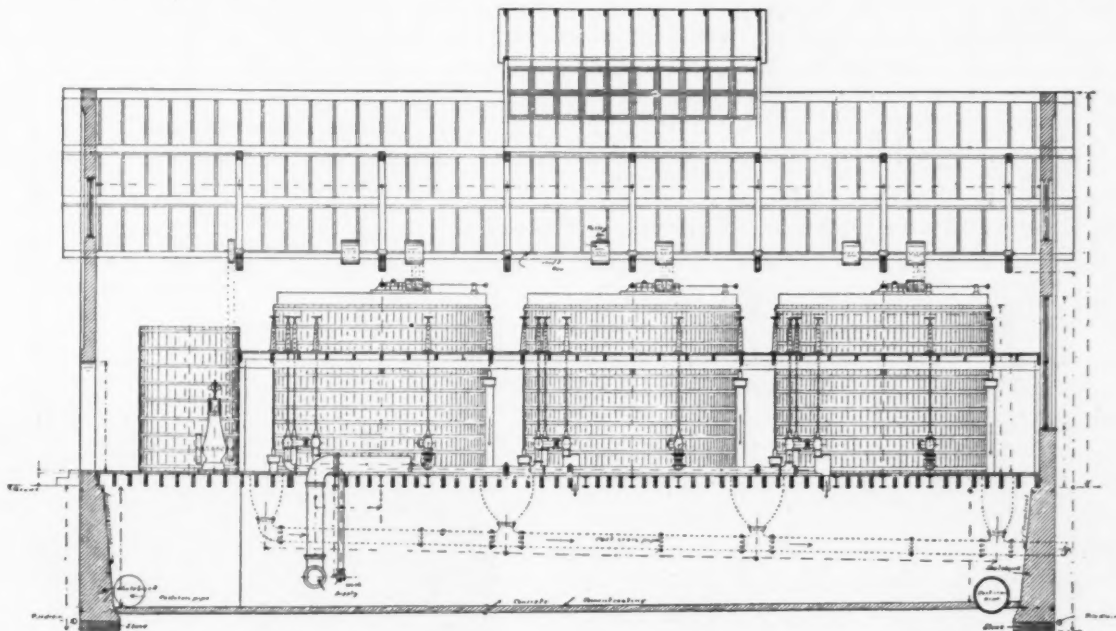
—Trade is reported by the Mineralized Rubber Company of New York as being about as slack as it has been at any time during the past nine months, excepting in the hose department, in which quite large parcels of garden hose and a smaller amount of fire hose than usual have been placed, and in bicycle tires, the trade in which is active, although prices range far lower than heretofore, a good tire being now purchasable at about \$5 per pair. The universally prevailing feeling of caution or "lack of confidence" seems to have permeated municipalities as well as private buyers, and consequently municipal orders don't seem to be placed until in need. But there are glimmerings of better times approaching, and small orders for articles not much demanded for many months months past occasionally show themselves, like the first "catpaws" on the surface of the water that precede a good breeze, and as sure as our great nation of seventy millions earn and spend more than any equal number of people on earth so sure is it that good times will succeed the present stagnation.



## THE LORAIN FILTER PLANT.

Probably the latest mechanical filtration plant put in operation in the United States is the one at Lorain, Ohio, which is of the Jewell pattern. The plant consists of six tanks, each with a filtering area 17 feet in diameter, being larger than any heretofore built. Our correspondent informs us that the water now being furnished the people of Lorain from this new plant is as clear as crystal and

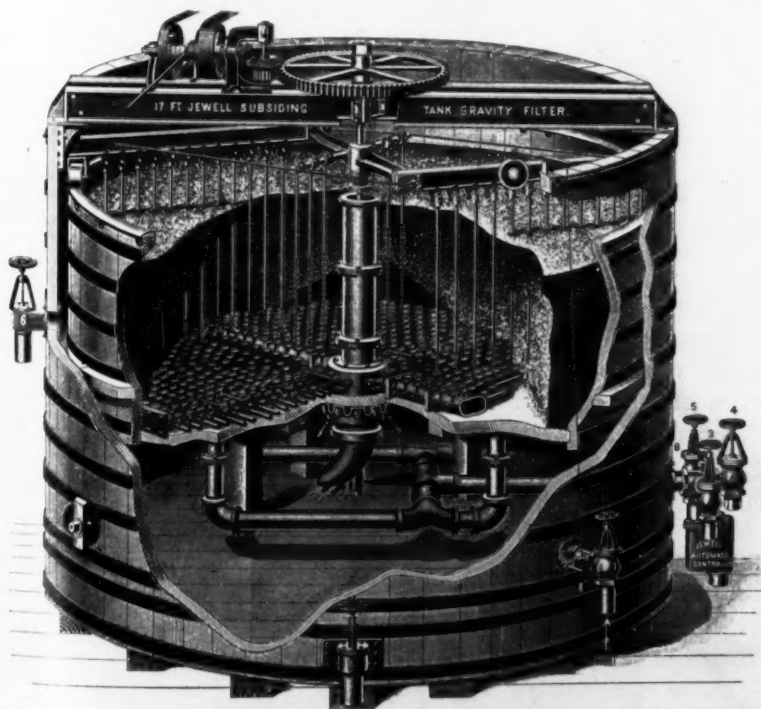
basin by a deflecting flange on the inside directly in front of the inlet pipe. In this way the deposition of sediment is equal over the entire basin, and the incoming water is prevented from causing local or short-cut currents. Sedimentation takes place very rapidly, and before the water reaches the upper central discharge from the basin all of the heavy matter and most of the finer impurities which have been coagulated are arrested. The water rises



SECTIONAL ELEVATION—LORAIN FILTER PLANT.

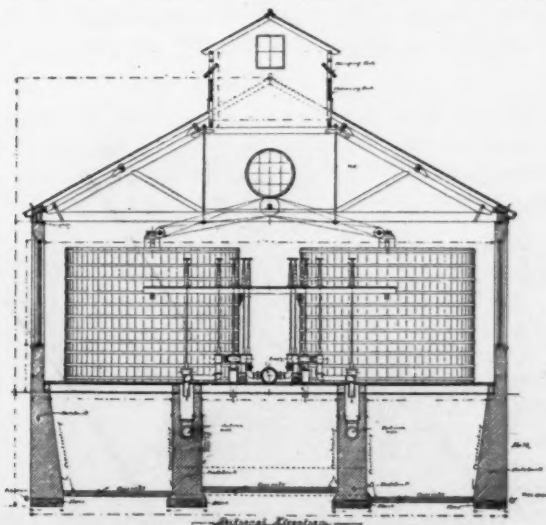
absolutely pure. The construction and mode of operation of the Jewell gravity filter are well known, but we present a sectional view of one of the new 17-foot tanks in the Lorain plant for the information of those who are

through the central stand-pipe into the filter bed, overflowing it. The current of the water then proceeds downward through the little interstices of the bed, depositing thereon whatever impurities have resisted sedimentation, and thence is collected evenly from all parts of the bed by the strainer system, first entering the numerous strainers, then the parallel branch pipes and



SEVENTEEN-FOOT JEWELL SUBSIDENCE GRAVITY FILTER. 103

not familiar with the system. The turbid or impure water enters the subsidence basin—the lower part of the main tank—through inlet valve 1, which is located near the bottom. The water is slowly circulated around this



END VIEW—LORAIN FILTER PLANT. 105

manifolds, and finally coming together in one volume in the "down-draft" pipe, which runs directly to the outside of the filter communicating with the cross to which valves 3, 4 and 5 are attached, from which latter valve it is discharged into the clear-water reservoir. The sand filter bed is washed by a reverse current, which enters through valve 4 and discharges through valve 6, the per-

pendicular rakes and bars being set in motion to agitate the semi-fluid bed and therefore facilitate the washing.

The filter tanks in the Lorain plant are arranged in two rows of three each, directly over a clear-water basin.

This basin is divided into three parts by two heavy walls, running lengthwise of the building, upon which the filters are mainly supported. These walls are provided with drain pockets and pipes for carrying off the wash water, as shown by the accompanying cuts. Conduits are provided in the two dividing walls of the reservoir, so that a constant circulation of water is maintained in all parts of same, and the floors of each compartment are graded to facilitate this.

The main feeder for the filters lies upon the floor of the filter house, as do also the wash water pipes; in fact, there are no pipes below the floor—a feature which will be readily appreciated. The valves are all operated from a platform or gallery, running almost the entire length of the building. This platform is situated about 4 feet below the top of the filters, thereby affording a convenient view, and greatly facilitating the operation of the filters.

The line shaft for driving the agitators is carried upon the lower horizontal girders of the truss roof. The engine, which is located on the floor of the filter house, is of the vertical type, and drives directly onto the line shaft. The tanks for the use of alumina sulphate, of which there are two, are located on the same level with the filters. They are connected in duplicate so as to work alternately. The alumina solution is drawn from these tanks by a small steam pump, which is located in the pump house and arranged to work automatically by the main supply pumps. The solution is then discharged into the supply main leading to the filters.

#### A GREAT HELP IN STREET CLEANING.

The illustrations on this page show the Ideal bag carrier in a manner that makes it unnecessary to describe it in lengthy detail. It is simply a light iron frame

used to receive street sweepings, or other material, as collected. In the work of cleaning the streets, each sweeper has with him one of these bag carriers; and when he starts out in the morning he takes with him, hanging on this handle of this little cart, a dozen or more empty bags. As fast as the streets are cleaned the sweepings are taken up and placed in one of these bags, which, when full, is tied with a cord provided for that purpose, and stood on the edge of the sidewalk. Another empty bag is placed on the carrier, and the cart is again ready for use. The full bags are collected at any convenient time by a suitable vehicle and taken to the dump, where they are emptied, and after cleansing are used again on the streets. The bag is supported on the carrier by means of two rings at the top, one fitting outside the other, the bag passing between them.

By the use of the Ideal bag carrier the sweepings



IDEAL BAG CARRIER. 107



IDEAL BAG CARRIER. 106

mounted on wheels, carrying a bag which is held in an open position by a ring at the top, and is intended to be

are removed from the street as soon as swept up, and are not blown about by the wind and scattered by the traffic while waiting to be collected by the carts. The work of shoveling the sweepings from the street into the carts is entirely done away with, thus avoiding a great nuisance, especially on windy days. The dirt is not exposed to the wind from the time it is first placed in the bag till it is released at the dump. No delay is caused in the work of the sweeper by the carts not being on hand to empty the receptacle when full, as with the hokey-pokey, for as many empty bags can be carried as needed for the whole day's work.

These bag carriers have been adopted by the Street Cleaning Department of New York, and Commissioner George E. Waring is thoroughly satisfied with them. A number of other cities throughout the country have also introduced the use of this excellent device. The Ideal bag carriers are made by T. N. Motley & Co., 43 John street, New York.



### AUTOMATIC CIRCUIT BREAKERS.

Fuse wire has proved so unreliable as an absolute safety device for protection from short circuits, overload, or grounds, and offering no reliable protection from

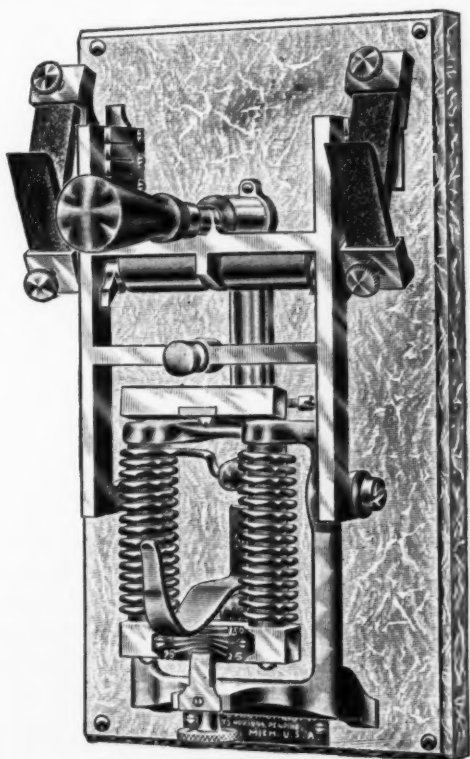


FIGURE 1. 108

lightning, that the electrical public has turned its attention to the use of automatic magnetic circuit breakers as a reliable substitute for fuse wire.

We illustrate the well-known automatic circuit breakers or limit switches made by the Automatic Circuit

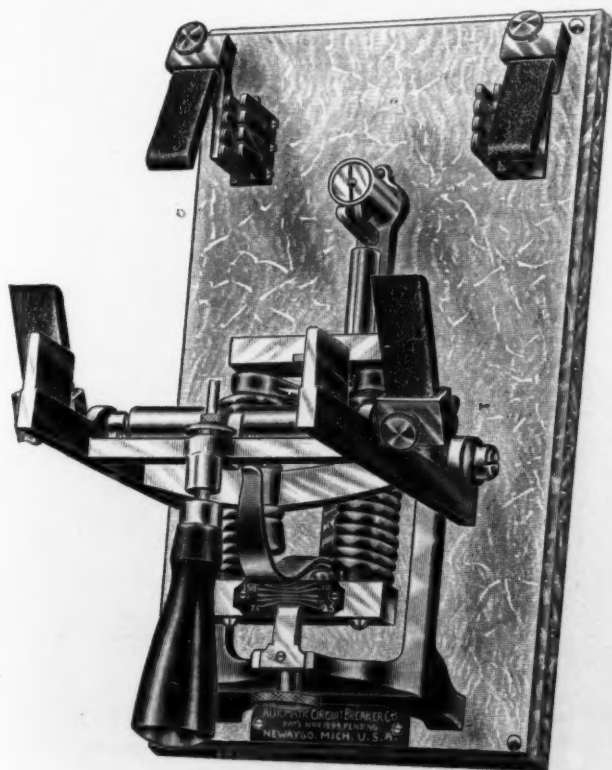


FIGURE 2. 109

Breaker Company, Newaygo, Michigan, with their latest improvements. Cut 1 shows circuit breaker closed. Cut 2, circuit breaker open, or as it appears after circuit

is broken. Cut 3, sectional view. Y represents base, either marble, slate, or other suitable material, preferably slate. A, copper contact. B and BI, carbons upon which they make their final break. C, dash pot that gives break frame its sudden blow through handle V, which has about one-eighth of an inch play, as shown at L, so that it gives break frame a hammer blow, overcoming any possible chances for contacts R and A sticking. D, latch. E, small weight to return armature to place after instrument has operated. F, screw through armature holder, making contact on point shown at G, which is a piece of iron running to magnet core and is magnetized so that it holds armature up until current exceeds the predetermined point. Then magnet G releases screw F, giving a hammer blow to E against latch D, and releases disk F, which is the catch on frame R, and a part of handle V, all movements being positive knock out blows. M is the graduation plate, graduations of their instruments being in amperes. N, adjusting screw for adjusting capacity, either increasing or decreasing to

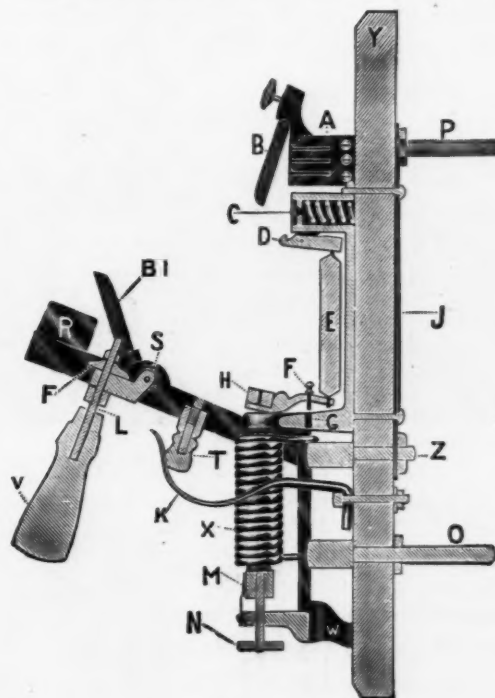


FIGURE 3. 110

any predetermined point between the minimum or maximum graduations. They have displaced all springs and intricate parts by a new and novel use of magnetism, being points F, and G, which is always positive and never varying in principle or operation.

The Automatic Circuit Breaker Company make a positive guarantee that their instruments will operate within 1 per cent. of their set capacity under any and all circumstances. They have them in use on all systems and voltages, and claim to manufacture the only successful alternating current circuit breaker now on the market. They attribute a great share of their success to the fact that they send out one or a full equipment to their customers, subject to approval. This being the season of the year when people should look after the protection of their electrical apparatus from lightning, and with the liberal views that this company have in the sale of their instruments, they should not hesitate to take up the matter of better protection to their electrical apparatus by the use of automatic circuit breakers.

—Robert McAfee, director of public works, Allegheny, Pa., has submitted the sixth annual report of that department. It shows that during last year thirty-five streets were paved, an aggregate of 9.46 miles, at a total cost of \$270,064.35.

## A SUPERIOR TRENCH SHOVEL.

On this page we present two illustrations of the steam trench shovel made by the Vulcan Iron Works Company, of Toledo, Ohio. These cuts were made from photo-

business instinct which is essential to success here is very sure in a town as live as New York to quickly point out that of all tests of good government for a city that of a low tax rate is least important. One of the chief merits of the present administration, for instance, has been that its head had the courage—the obstinacy, if you will—to stand up against the traditions of a score of years and demonstrate that we not only needed vastly more money to clean the streets than had ever been spent before, but that if a sufficient amount were used the work could actually be done so that its effects would not be wasted, as had always been the result while we insisted on skimping the appropriations against the better judgment of nine-tenths of our population. Colonel Waring's notable success redounds equally to the credit of Mayor Strong, and yet the credit is due to neither so much for what they have accomplished with the means at their disposal as for their courage in insisting upon sufficient means. And as in street cleaning, so in other departments; that is by no means the best city government which spends the least money. What



STEAM TRENCH SHOVEL—VULCAN IRON WORKS. //

graphs taken while the shovel was in operation. This shovel is built on the most scientific lines, and has a capacity to dig a trench from 5 to 14 feet wide and as deep as 20 feet. The shovel propels itself easily. The great feature of this machine over anything else for trench digging is the fact that it always remains on solid ground and avoids the possibility of any pressure on the side banks. This shovel is in successful operation in Chicago, St. Louis, Pittsburg and many other cities.

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the people demand is efficient departmental service.—*New York Journal.*



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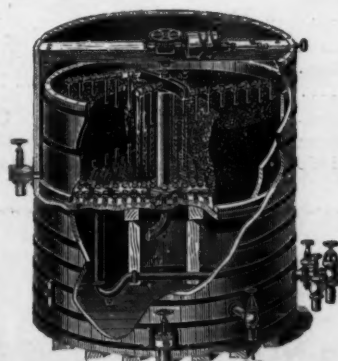
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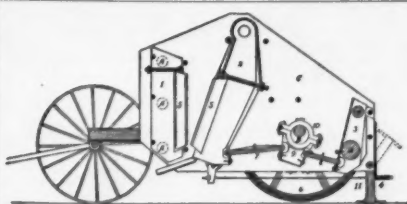
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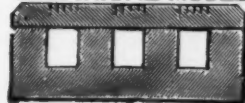
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